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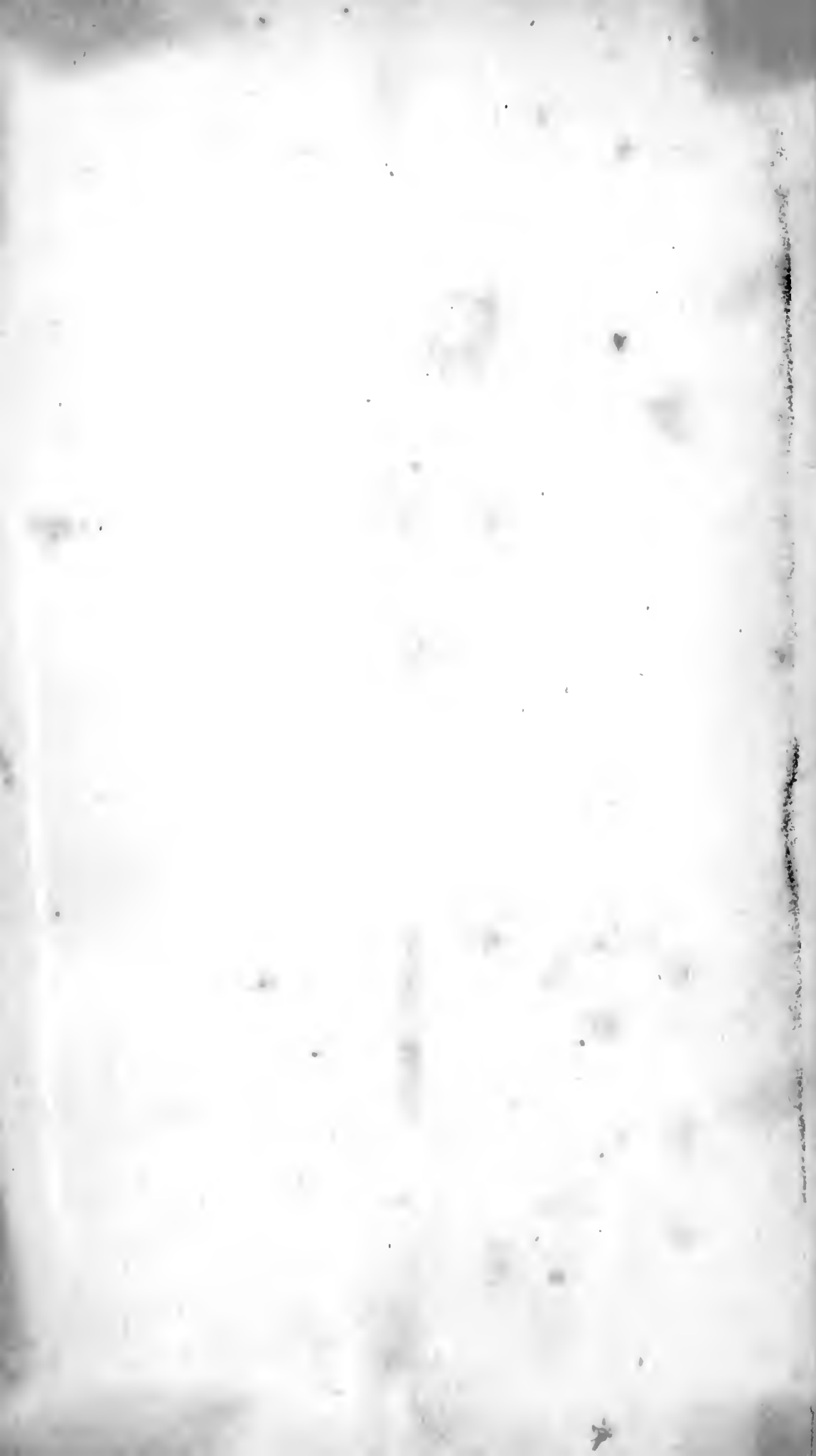
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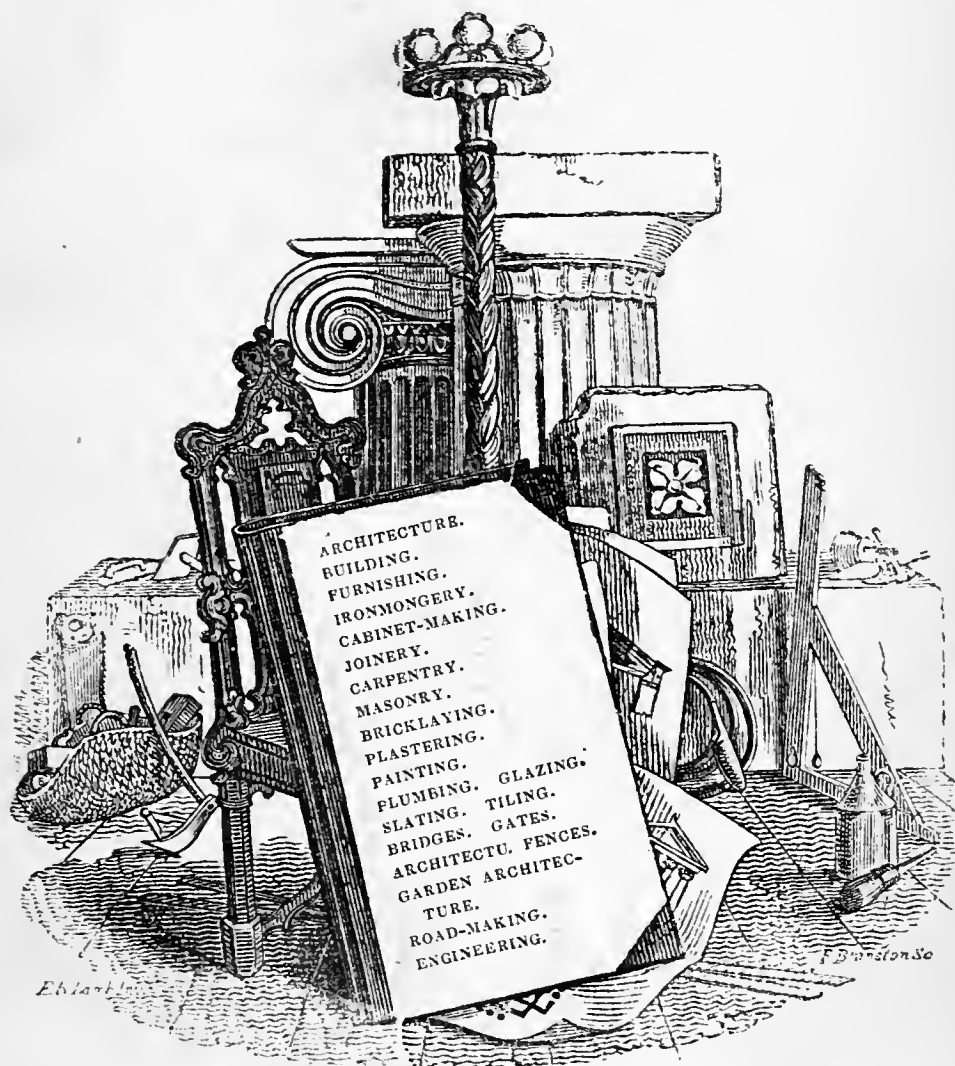
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THE
ARCHITECTURAL MAGAZINE,
 AND
JOURNAL
 OF IMPROVEMENT IN
ARCHITECTURE, BUILDING, AND FURNISHING,
 AND IN THE VARIOUS ARTS AND TRADES
 CONNECTED THEREWITH.



CONDUCTED BY J. C. LOUDON, F.L.S. H.S. &c.

AUTHOR OF THE ENCYCLOPÆDIA OF COTTAGE, FARM, AND VILLA ARCHITECTURE
 AND FURNITURE.

VOL. V.

LONDON:

LONGMAN, ORME, BROWN, GREEN, & LONGMANS,
 PATERNOSTER ROW; AND

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1838.

LONDON :
Printed by A. SPOTTISWOODE,
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P R E F A C E.

WITH this Fifth Volume of the *Architectural Magazine*, the work is brought to a close ; a circumstance which would occasion its Conductor much more regret than it does, were it not for the following reasons : —

The great object of the *Architectural Magazine* has been, to render the subject of Architecture familiar to the general reader ; or, in other words, to give it popularity. Accordingly, the volumes already published embrace every department of Architecture, both as an Art of Design and Taste, and as an Art of Construction ; they may be considered as including a popular view of all the leading features of Architecture and Building. The work, therefore, in its present limited extent, is more likely to be extensively read, than if it had been carried on to an indefinite number of volumes.

The *Architectural Magazine* consists of a collection of papers, the object of which is to render Architecture familiar to the general reader ; and, by this means, to diffuse such a knowledge of the subject, both as an Art of Design and Taste, and as one of Construction, as shall form a solid foundation for the progress of architectural improvement. Every accession of knowledge is an increase of enjoyment ; and, by instructing the eye in the exterior forms and ornaments of buildings, and in the materials and principles of their construction, a new source of pleasure will be opened up. Besides this, a more intimate knowledge of Architecture and Furniture will not only produce increased domestic comforts, by enabling all householders to detect defective arrangements, imperfections of construction, and inefficient modes of lighting, warming, and ventilating, but will enable them to perceive where improvements may be best made in the department of fitting up and furnishing.

The progress of architectural improvement no doubt depends in some degree on the progress which architects make in the knowledge of their art ; but it depends much more on an increase of architectural taste on the part of the public. As long as the public are comparatively ignorant of what is required for the comfort of their own dwellings, so long will they be unable to distinguish between architects of inferior skill, and those who possess a competent knowledge of their profession ; but as soon as the taste of the public has been cultivated, and householders have obtained a sufficient knowledge of the subject to enable them to detect faults, and to feel the advantages of good methods of arrangement and construction, then architects will be compelled to study to suit the wishes of their employers. Hence, to enlighten the public generally with regard to Architecture, and the arts immediately connected with it, has been the great object of the *Architectural Magazine*. The *Encyclopædia of Cottage, Farm, and Villa Architecture and Furniture*, was undertaken with a view to the same end ; and to that work the *Architectural Magazine* may be considered as the sequel ; bringing down the progress of architectural improvement to the year 1839.

Bayswater, Dec. 21. 1838.

J. C. L.

CONTENTS.

	Page		Page
Original Communications : —		Relative Subjects	- vi
Historical and Statistical	- iv	Catalogue	- vi
The Poetry of Architecture	- iv	Literary Notices	- vii
The Philosophy of Architecture	- iv	Miscellaneous Intelligence : —	
Architectural Criticism	- iv	General Notices	- vii
Architectural Practice	- v	Foreign Notices : —	
Building	- v	France	- vii
Warming and Ventilating	- v	Germany	- vii
Furniture	- v	Italy	- vii
Engineering	- v	Greece	- vii
Land-Surveying	- v	Wallachia	- vii
Reviews : —		Norway	- vii
General History of Architecture	- v	Jamaica	- vii
Ancient Egyptian Architecture	- v	North America	- vii
Architectural Dictionaries	- v	Domestic Notices : —	
Architectural Education	- v	England	- vii
Architectural Criticism	- vi	Scotland	- viii
Topographical and Descriptive Architec-		Ireland	- viii
ture	- vi	Retrospective Criticism	- viii
Architectural Designs	- vi	Queries and Answers	- viii
Geometry of Architecture	- vi	Institute of British Architects	- viii
Perspective	- vi	Obituary	- viii
Building	- vi	List of Engravings	- viii
Warming and Ventilating	- vi	List of Contributors	- ix
Engineering	- vi		

ORIGINAL COMMUNICATIONS.

<i>Historical and Statistical.</i>		of Sir Walter Scott, in Edinburgh? By	
A Summary View of the Progress of Archi-		Kata Phusin	- 625
tecture in Britain during the year 1838; with		<i>The Philosophy of Architecture.</i>	
some Notices relative to its Advancement		Architectural Metaphysics. From the "Bri-	
in Foreign Countries. By the Conductor -	529	tish and Foreign Review."	- 636
Historical Notice of Solomon's Temple: with		On the Philosophy of Architecture. From	
some preliminary Remarks on the Taber-		the German of Weinbrenner. Translated	
nacle. From Lectures on Archæology, de-		for the "Architectural Magazine" by M.L.	392
livered in Paris by M. Raoul Rochette, and		<i>Architectural Criticism.</i>	
published in "L'E'cho du Monde savant."		Are Architectural Monuments only to be	
Translated for the "Architectural Maga-		erected among Architectural Objects? By	
zine," by M. L.	- 154	W.	- 499
The sacred Tombs of the Valley of Jehosha-		Candidus's Note-Book. Fasciculus X. to XIV.,	
phat. By M. Raoul Rochette	- 301	14. 219. 367. 442. 565	
<i>The Poetry of Architecture.</i>		Critical View of the Architecture of New	
The Poetry of Architecture : —		York. By M. F., a late Member of the Pro-	
The Cottage	- 7	fession in England	- 641
The Mountain Cottage, Switzerland	- 56	Horæ Architectonicæ; or, Rough Notes on	
The Mountain Cottage, Westmoreland	- 97	Architectural Subjects. By Nemo. No. 1.	
Supplementary Notice to the Paper on the		Architectural Nomenclature	- 495
Lowland Cottage, Italy	- 105	Remarks on the present State of Architecture	
A Chapter on Chimneys	- 145	in Britain, and on the Institute of British	
The Cottage, continued	- 193	Architects. By a Provincial Architect	- 1
The Villa	- 241	On the Establishment of a Society for the	
The Mountain Villa. — Lago di Como	- 289	Restoration of Ancient Buildings. By M.	162
Notes to the Italian Villa, No. 3. p. 244.	- 300	Brief Hints for the Preservation of the Archi-	
The Villa, continued	- 337	tectural Remains of the Middle Ages. By	
The Lowland Villa. — England	- 395	E. B. Lamb, F.R.S.A.	- 159
The English Villa. — Principles of Com-		Notes on Modern Architecture. No. 3. to 5,	
position	- 433	By Amicus	- 63. 215. 415
The British Villa. The Cultivated, or Blue,		Suggestions relative to the best Models of	
Country. — Principles of Composition	- 481	Style to be adopted in designing the new	
The British Villa. Hill, or Brown, Coun-		Houses of Parliament in the Gothic Taste.	
try. — Principles of Composition	- 533	By Henry Noel Humphreys	- 49
Whether works of Art may, with propriety,		Remarks on Competition Designs for rebuild-	
be combined with the Sublimity of Nature;		ing the Royal Exchange. By Henry Noel	
and what would be the most appropriate		Humphreys	- 110
Situation for the Monument to the Memory		The Royal Exchange Competition. By Can-	
		didus	- 265

Fragments connected with Architecture and the Arts, from a Provincial Tour. By Henry Noel Humphreys	-
A few Reflections upon Windows. By Henry Noel Humphreys	- 648
On the System and Principles pursued by the Gothic Architects, from the Eleventh to the Fifteenth Centuries inclusive, in the Embellishment by Colour of the Architectural Members and other Parts of their Religious and Civil Edifices. By Frederick Lush	- 198
The Chocapside Obelisk. By T.	- 372
Ideal Restoration of the Athenian Olympieum. By Charles E. A. Blair, Architect	- 105

Architectural Practice.

Design for a Suburban Residence to be erected at Stuttgart, by Direction of His Majesty the King of Wurtemberg. By E. B. Lamb, Fellow of the Royal Institute of British Architects	- 18
Some Account of the Girard College for Orphans, now erecting at Philadelphia, from the Designs and under the Superintendence of Thomas U. Walter, Architect. Drawn up from Materials printed and published in Philadelphia, and from the verbal Communications of Mr. Walter	- 446
Notice of the new Church at Charmouth, lately erected from the Designs of Charles Fowler, Architect, F.I.B.A., &c. Communicated by Mr. Fowler	- 509
Design for a Church. By Edward Brigden, Architect, Bristol	- 223
Design for a Union Workhouse. By Christopher Eales, Architect	- 510
A short Notice of the Kirk of Alyth, recently erected, in Perthshire. By a Subscriber	- 572
Description of Covent-Garden Market, London, built from the Designs of Charles Fowler, Architect, F.I.B.A. By the Conductor	- 665
Two Designs for Monuments. By Herman Herman, Architect, Munich	- 575
An Account of an immense Chimney, recently built at Carlisle; with Suggestions for applying Chimneys or Cones, of immense Height, to scientific Purposes. By P. A.	- 165
A Method of Building an Obelisk without Scaffolding, as adopted by T. Slack of Langholm	- 502
Design for a Villa, comprising Two distinct Residences. By W. H. Leeds	- 554
A Design for a Labourer's Cottage or Gate Lodge, in the Grecian Style. By Edward Brigden, Architect, Bristol	- 74
Experiments made for the Purpose of ascertaining and exhibiting the necessary Strength of Piers to be employed at the Angles of Buildings, carrying Arches over Doors and Windows. By William Bland	- 408
Remarks on the Construction of Waterloo Bridge and London Bridge. By an Architect. Communicated by T. B. W.	- 255
On Selecting the Position of a House on the Side of a Hill. By N.	- 29

A House for an Invalid. By T. K.	- 459
The Corrugated Cast-Iron Roof of the Coal Dépôt of the London Gas-Works, Vauxhall. By M. D.	- 66
Notice of an Improvement to a Cottage Fireplace. By M. Saul	- 225

Building.

Hints on Construction: addressed to Architectural Students. By George Godwin, Jun., F.S.A. and M.I.A.	Nos. 1. to 6. - 250. 304. 361. 411. 464. 514. 577.
---	---

Warming and Ventilating.

Official Report made to Charles Boyd, Esq., Collector of Her Majesty's Customs, for the Information of the Hon. Board of Commissioners, upon Bernhardt's Stove Furnaces. By Andrew Ure, M.D. F.R.S., &c. Communicated by the Author	- 31
Reply of M. F. A. Bernhardt, Architect, to the official Report of Dr. Ure, F.R.S., on his new System of Warming and Ventilating, published in the "Architectural Magazine" for January, 1838.	- 182
Report as to the Safety and Efficiency of Joyce's Patent Heating Apparatus. By J. T. Cooper, and Professor Brande	-
A Stove on a new Construction, for heating any large Apartment, or the House of Commons. By R. Mallet	- 167
On the Ventilation of large Buildings by the Intervention of Openings in the Windows. By R. Mallet	- 258
On Furniture. By E. B. Lamb, F.I.B.A.	- 27

Furniture.

Design for an Architectural Bookcase. By G. B. W.	- 598
An Architect's Desk. By E. B. Lamb, F.I.B.A.	- 262
Design for a Sofa, by L.	- 604
A temporary Table, or Ironing-Board, for small Country Cottages. By W. S.	- 75
Notice of Two Rocking Chairs. By James Frewin, Builder	- 664
Notice of a new Fastening for a Dressing-room Swing-Glass. By W. F. D.	- 605
Description of a cheap portable Shower-Bath, invented by James Milne, Brass-Founder, Edinburgh. Communicated by Mr. Milne	- 468
On the Essentials requisite for the perfect Filtration of Water for domestic Use. By John Isaac Hawkins, Civil Engineer	- 659

Engineering.

On the most proper sectional Form to be given to Weirs or River Dams. By Robert Mallet	- 261
--	-------

Land-Surveying.

Notice of an Instrument to be used in Land-Surveying, for reducing the Length of Lines over undulating Surfaces to the Length of the Base, or level Line. By Richard Varden, Architect	- 663
--	-------

REVIEWS.

General History of Architecture.

An Historical Essay on Architecture. By the late Thomas Hope. Illustrated from Drawings made by him in Italy and Germany	- 171. 317. 422. 475. 611
--	---------------------------

Ancient Egyptian Architecture.

Manners and Customs of the Ancient Egyptians; including their private Life, Government, Laws, Arts, Manufactures, Religion, and early History; derived from a Comparison of the Paintings, Sculptures, and Monuments, still existing, with the Accounts of ancient Authors. Illustrated by Drawings of those Subjects. By J. G. Wilkinson, F.R.S., M.R.S.L., &c.	- 310
--	-------

*Architectural Dictionaries.**

Britton's Dictionary of the Architecture and Archaeology of the Middle Ages	- 417
A Glossary of Terms used in Grecian, Roman, Italian, and Gothic Architecture	- 80

Architectural Education.

An Address on the Subject of Education, as connected with Design in every Department of British Manufacture; together with Hints on the Education of the Poor generally. By Geo. R. Lewis	- 268
A Letter to His Royal Highness the Duke of Sussex; with a Plan for the Promotion of Art, Science, and Literature, by the	

moderate but Ineffectual Assistance of Government. By Thomas L. Donaldson, Architect - - - - 77

Architectural Criticism.

Prousiones Architectonicæ; or, Essays on Subjects connected with Grecian and Roman Architecture. By William Wilkins, A.M., R.A., F.R.S., formerly a senior Fellow of Caius College, in the University of Cambridge; Regius Professor of Architecture in the Royal Academy. Part I. - 42

Topographical and Descriptive.

The Churches of London: a History and Description of the Ecclesiastical Edifices of the Metropolis. By George Godwin, jun., Architect, A.I.B.A., Assisted by J. Britton, F.S.A., &c. The Illustrations by Robert William Billings, A.I.B.A. Nos. 11 to 14. 129

Architectural Illustrations and Account of the Temple Church, London. By Robert William Billings, Associate of the Institute of British Architects - - - - 377

Selections and Fragments of the Architecture of the Middle Ages; drawn from Nature and on Stone. By Joseph Nash - - - - 320

The History and Description, with graphic Illustrations, of Cassiobury Park, Hertfordshire, the Seat of the Earl of Essex. By John Britton, F.S.A., &c. - - - - 114

Illustrations of the Public Buildings of London; with Historical and Descriptive Accounts of each Edifice. By Pugin and Britton. Second Edition, greatly enlarged by W. H. Leeds, 2 vols. 8vo., London, 1838. - - - - 606

Architectural Designs.

Entwurf zur Boerse auf dem Adolphi-Platze in Hamburg. Von A. de Châteauneuf. Design for an Exchange adapted for Adolph's Square, Hamburg, &c. - - - - 320

Designs for Sepulchral Monuments. By Carl Tottie, Architect. Engraved by Edward Ravenscroft. - - - - 519

Engravings:—

Design for the New Exchange Buildings, Manchester, by T. Taylor, Architect. - - - - 392

The Interior of the Chapter-Room in the Cathedral of Bristol, by John Willis - - - - 322

Blaise Hamlet - - - - 323

Henbury Cottages - - - - 323

The Victoria Rooms, Bristol. Designed by S. G. Tovey - - - - 323

Plan of the Gloucester Zoological, Botanical, and Horticultural Gardens, in the Park, Cheltenham. Designed by T. Billings - - - - 323

Geometry of Architecture.

Mechanics for Practical Men. By Alexander Jamieson, L.L.D., Author of a "Dictionary of Mechanical Science," and a "Treatise on the Elements of Algebra" - - - - 44

Mechanics of Fluids for Practical Men, comprising Hydrostatics, descriptive and constructive; the whole illustrated by numerous Examples and appropriate Diagrams. By Alexander Jamieson, L.L.D., Author of "Elements of Algebra," &c. - - - - 173

Original Geometrical Illustrations; or, the Book of Lines, Squares, Circles, Triangles, Polygons, &c. By John Bennett, Engineer. Author of the "Artificer's Complete Lexicon," "Labour Prices for Builders," &c. - - - - 77

Perspective.

A Treatise on Projection, &c. By Peter Nicholson - - - - 75

Lawrence's Perspective Simplified; or, the Principles of the Art, as laid down by Dr. Brook Taylor, familiarly illustrated - - - - 420

Building.

Practical Observations on the Asphaltic Mastie, or Cement of Seyssel, now extensively employed on the Continent, for Pavements, Roofing, and Flooring, for Hydraulic

Works, &c.; explaining its Nature and Manipulation, &c. By F. W. Simms, Civil Engineer, late of the Royal Observatory. Author of a "Treatise on the principal Mathematical Instruments employed in Surveying, Levelling, and Astronomy, &c. 81

Warming and Ventilating.

On Warming and Ventilating; with Directions for making and using the Thermometer Stove, or Self-regulating Fire; and other new Apparatus. By Neil Arnott, M.D. F.R.S., &c., Physician Extraordinary to the Queen, Author of the "Elements of Physics," &c. - - - - 120

A Practical Treatise on Warming Buildings by Hot Water; and an Inquiry into the Laws of radiant and conducted Heat; to which are added, Remarks on Ventilation, and on the various Methods of distributing artificial Heat, and their effects on Animal and Vegetable Physiology. By Charles Hood, F.R.A.S. - - - - 44

Engineering.

Blunt's Civil Engineer and Practical Machinist: Treatises on Civil Engineering, Engineer Building, Machinery, Mill-Work, Engine-Work, Iron-Founding, &c.; executed for the Use of Engineers, Iron-Masters, Manufacturers, and operative Mechanics. By Charles John Blunt, Civil Engineer and Practical Machinist. Division B. - - - - 78

A Treatise on Engineering Field-Work; containing Practical Land-surveying for Railways, &c. By Peter Bruff, Surveyor, &c. - - - - 270

Wood's Practical Treatise on Railroads, and Interior Communication in general - - - - 419

A Series of Lithographic Drawings on the London and Birmingham Railway, by John C. Bourne, with Topographical and Descriptive Accounts of the Origin, Progress, and general Execution of that great National Work. By John Britton, F.S.A. Author of the "Architectural and Cathedral Antiquities of England," "Dictionary of Architecture," &c. Inscribed by permission, to the Engineer and Directors of the Company. Folio, London, 1838. - - - - 609

Stevenson's Sketch of the Civil Engineering of North America; comprising Remarks on the Harbours, River and Lake Navigation, Lighthouses, Steam Navigation, Water-Works, Canals, Roads, Railways, Bridges, and other Works in that Country. 471

A Treatise on Roads; wherein the Principles on which Roads should be made are explained and illustrated by the Plans, Specifications and Contracts made use of by Thomas Telford, Esq., on the Holyhead Road. By the Right Hon. Sir Henry Parnell, Bart., Honorary Member of the Institute of Civil Engineers - - - - 379

Relative Subjects.

Ure's Dictionary of Arts, Manufactures, and Mines; containing a clear Exposition of their Principles and Practice - - - - 470

Transactions of the Society of Arts, Manufactures, and Commerce - - - - 420

Lewis's Portraits of British Forest Trees, with and without their Foliage; together with Instructions for drawing Trees from Nature, and Rules for obtaining the Height, Width, and true Proportion that each Part bears towards another, clearly explained and exemplified - - - - 421

CATALOGUE OF WORKS ON ARCHITECTURE, &c.

Hopper versus Cust, on the subject of rebuilding the new Houses of Parliament. An Address to the "Leading Men of Manchester," suggested by a Letter on establishing a School of Design. By H. B. Haydon, Esq. Inserted in the Manchester Guardian of Sept. 17. 1837, by J. W.

Hance. Reprinted from the Manchester Courier, with considerable Additions	- 45	Bennet's Arcanum: comprising a concise Theory of Practical, Elementary, and Definitive Geometry	- 271
Le Keux's Memorials of Cambridge, &c., No. IV.	- 130	Godwin's Churches of London	- 271
Bennett's Millwright's and Engineer's Pocket Director	- 130	Wright's Memorials of Cambridge	- 272
Some Account of Mont Orgueil Castle, in the Island of Jersey; its present state, its various Alterations and Additions: with a poetical Description of the Castle, written by William Prynne, during his Confinement therein, from 1637 to 1646.	- 130	Report of the Committee of Management of the Association for the Promotion of the Fine Arts, called the Art Union of London, for the Year 1836-7.	- 272
Angell's Historical Sketch of the Royal Exchange	- 131	Sopwith's Observations on a proposed Line of Road from Shotley Bridge to Middleton, in Teesdale.	- 272
Bernhardt's Questions relating to Fires in general, the Draught of Smoke, and the Saving of Fuel	- 131	The Plumber's, Painter's, Glazier's, House Decorator's, &c., Pocket Director: comprehending select and useful Prices of the various Works in their respective Departments; including also a variety of Information of practical Utility; with a copious List of the Trade. By John Bennet, Engineer, &c.	- 321
Weale's Scientific Advertiser, Nos. 1 and 2.	133	Letter to His Grace the Duke of Hamilton, and the other Noblemen and Gentlemen, the Committee appointed by the Subscribers for a Monument in Edinburgh to the Memory of Sir Walter Scott. By Robert Cadell	- 321
Neill and Fraser's Observations on the Proposal of building at the Cross, and of shutting up the Royal Bank Close	- 133		
Parker's Suggestions for Warming and Ventilating Thirty-seven Cells, to be erected in the Salop Gaol, for the separate Confinement of Prisoners	- 133		
Description of an Inkstand, upon a simple, cheap, and useful Plan, in which the Supply of Ink adjusts itself by a Float, with Figures engraved on Wood.	- 133		
Neill's Remarks on the Report of the Lord Provost's Committee, 19th July, 1837, relative to the proposal of Building at the Cross	- 134		
Bennet's Carpenter's and Joiner's Pocket Directory	- 270		
Bennett's, Bricklayer's, Plasterer's, Stone-Mason's, and Slater's Pocket Director.	- 270		

LITERARY NOTICES.

Architectural Illustrations of the Temple Church, London, drawn and engraved by Robert William Billings, Associate of the Institute of British Architects	- 45
Brown's History of the Edifice of the Metropolitan Church of St. Peter, York	- 272
Britton's Illustrations of the London and Birmingham Railway	- 272

MISCELLANEOUS INTELLIGENCE.

GENERAL NOTICES.

Harper and Joyce's new Stove and improved Fuel	- 84
New Material to be applied to Dwelling-houses, to render them capable of resisting Fire, A.	- 85
Hydrostatic Measurement of Timber, A. J.	- 86
British Artists and Writers on Art	- 273
The prospective Changes in Mechanics	- 273
Railroads	- 273
Steam Carriages on common Roads	- 274
Hague's Transferring Power	- 274
Harper and Joyce's Stove	- 275
Dr. Arnott's Stove	- 276
New Camera Lucida	- 276
Zinc not oxidisable	- 276
What is Art?	- 323
Effect of Ornament according to its Disposition	- 324
Gothic Architecture according to Frederick Schlegel	- 325
Compositions for rendering Buildings Fire-proof	- 326
Noxious Effluvia	- 326
A general Slaughter-house	- 326
Painted Architecture	- 618
Duty on Bricks	- 619

FOREIGN NOTICES.

France.

Paving with Asphaltum, G. B. W.	- 45
Architectural Prize by the Institute of France, M. I. B. A.	- 276
Canal parallel to the Banks of the Rhine, from Basle to Strasburg	- 277
Cathedral of Chartres	- 277
Horloge de la Mort du Roi	- 278
Safety Apparatus contrived by a Galley-Slave	- 278
Museum of Besançon	- 278
Ancient Church in Brittany	- 278
Fonvielle's Filtering Apparatus	- 278

Germany.

A Temple dedicated to the eminent Men of Germany	- 279
Railroads in Austria	- 280

Opening of a Railroad at Vienna	- 280
The Catholic Church of Darmstadt	- 521
<i>Italy.</i>	
The Excavations at Pompeii	- 280
<i>Greece.</i>	
Ancient Tomb	- 280
<i>Wallachia.</i>	
Wallachian Village	-
<i>Norway.</i>	
Dwellings of the Rural Population in Norway, as compared with those of Britain and Ireland	- 326
<i>Jamaica.</i>	
New Church at Annandale, St. Ann's, F. Lush	- 521
<i>North America.</i>	
New Stove for Carriages	- 46
Girard College for Orphans, Philadelphia, T. N. Walter	- 327

DOMESTIC NOTICES.

England.

Projected School of Design at Manchester, J. W. H.	- 46
Lighting the House of Commons	- 87
Ventilation of the House of Commons	- 87
Serjeant's Inn, Chancery Lane, W. H.	- 88
The late Royal Exchange, Candidus	- 88
"New Light," in the House of Commons	- 134
Improvement of London	- 134
City of London Literary and Scientific Institution	- 135
The Reform Club House	- 136
Improvements in the North-Western Part of London, G. B. W.	- 136
A New Street, G.	- 136
Safety of Bonds, Bills, &c.	- 136
Specimens of painted Glass, Frederick Lush	- 136
Roe's Water-Closet, without the usual Apparatus	- 137
New Church at Stayley Bridge, Cheshire	- 137
Poor Houses at Norwich, William Thorold	- 138

Stratford-upon-Avon Church, Warwick-shire, B.	139	Colossal Statue at Golspie	480
House-Painting	178	Erratum	480
Two Medals for the Encouragement of Civil Architecture	178	<i>Ireland.</i>	
Formation of a School of Design in Manchester	178	Dublin: Warming and Ventilating, J. M.	335
A Jet d' Eau upwards of 80 feet high	227	A Moravian Burial-Ground at Ballymena	424
The Art Union, G.	227	Railroads	424
Asphaltic Cement	228	<i>RETROSPECTIVE CRITICISM.</i>	
Howel's Double-action Door-Hinges	228	Erratum	90. 140. 192. 281
Manchester Architectural Society, John Wm. Hance	280	The Glyptotheca at Munich, H. N. H.	90
Patent Roof	281	Davis's Gothic Ornaments, E. B. L.	91
Laying the first Stones of the New Bridge, Manchester	281	Parsey's Natural Convergence of Perpendiculars, Arthur Parsey	91
The Squares of London	328	Parsey's Natural Convergence of Perpendiculars, William Willmer Pocock, jun.	92
Palace of the Duke of Sutherland	328	Remarks on the Convergence of Perpendiculars, Kata Phusin	94
London Street Houses	329	H. N. Humphreys	140
New Street from Westminster Abbey to Pimlico, G.	330	Another Word on Parsey's Doctrine of Perspective, Candidus	140
Improvements in the North-western Part of London, G. B. W.	330	Dr. Ure's Report on M. Bernhardt's System of Warming and Ventilating, F. A. Bernhardt	142
Specimens of painted Glass, Frederick Lush	330	Mr. Humphreys's Suggestions as to Models of Style, &c. M. I. B. A.	189
Liverpool Observatory	330	Mr. Parsey and his Critics, Q.	190
Watering-Troughs for Cattle	331	Candidus on Mr. Parsey's Principles, &c. Kata Phusin	191
Manchester Architectural Society's Con-sazione	331	The Chancel of Stratford Church, Harvey Eginton	192
Intended Improvements at St. Helen's	333	Glyptotheca, G. B. W.	192
Kyan's Patent	423	Parsey's Natural Convergence of Perpendiculars, Arthur Parsey	228
Borradaile and Co.'s patent Felt for preventing the Transmission of Sound, &c, Frederick Lush	478	Mr. Lamb's brief Hints for the Preservation of the Architectural Remains of the Middle Ages, Frederick Lush	230
The Architecture of Gin Palaces, id.	478	Arnott's Stove	230
Intended Improvements at Westminster, id.	479	Parsey's Natural Convergence of Perpendiculars, Kata Phusin	282
Ashby-de-la-Zouch new Church	480	Preservation of Architectural Remains, E. H.	283
Manchester Architectural Society	522	Victoria Rooms, Bristol, Charles Dyer	425
Buildings in unhealthy Situations	619	Parsey's Natural Convergence of Perpendiculars, Arthur Parsey	425
Building on the Royal Kitchen-Gardens, Keesington Gravel Pits	620	Parsey's Perspective Rectified, Chappell Smith	426
Supplying St. Pancras with Water from Artesian Wells	621	Mr. Chappell Smith on Parsey's Convergence of Perpendiculars	426
A Statue of the late Rev. — Valpy, Reading	621	Britton's Dictionary of Architecture, Candidus	522
Thickness of Metal on Macadamised Roads, Devonshire	621	Parsey's Convergence, &c., B. H.	526
The Surveyors' Report as to the Strength of the Roads of the Trust, ascertained by pitting	622	Parsey's Convergence of Perpendiculars, Kata Phusin	526
Crediton Road; London Road; Exmouth Road; Chadleigh, or Plymouth Road; Okehampton Road	622	Planting Church-yards	624
A Union Workhouse, Shaftesbury	622	<i>QUERIES AND ANSWERS.</i>	
Chapel of Ease at Charlton	623	Mode of securing Water-Pipes against Frost, T. W. S.	142
Gillingham Old Church	623	Fire-proof Safes, Henry B. White	143
Tinber Viaducts, Northumberland. New-castle	623	Filtration, James Simpson	143
Arches of luminated Plates of Iron	623	Galvanisation of Iron-work, to preserve it from Rust	284
Enlargement of the Village, Clifton, Somersetshire; Brunel's Suspension Bridge	624	Margary's Process for preventing the Dry Rot	284
<i>Scotland.</i>		INSTITUTE OF BRITISH ARCHITECTS	48. 143. 284. 336. 380. 430
Edinburgh: Effects of the Lightning on the Melville Monument, struck on the 14th of July, 1837	181	<i>OBITUARY.</i>	
The Duke of York's Monument in Edinburgh	228	John Linnell Bond, Esq.	43
Perthshire: Victoria Bridge	281	Aloysius Hirtt	144
Lanarkshire: Glasgow Mechanics' Institution	333	M. Fauvel	283
Renfrewshire: A new Water Power	334		
Kewley's Alarum-Thermometer	334		

LIST OF ENGRAVINGS.

Public Buildings.			Page		
No.		Page	No.		Page
23—26.	Islington Proprietary School	70—73	178—182.	Design for a Union Workhouse	510—514
30.	The Glyptotheca at Munich	91	191—194.	Kirk of Alyth in Perthshire	572—575
41.	Ideal Restoration of the Athenian Olym- pieum	106	290—294.	Covent-Garden Market	666—671
76—81.	An Economical Church	223—225	<i>Private Buildings.</i>		
173—176.	Malcomb Obelisk at Langholm, with the Architectural Details for Building it	504—507	1—3.	Suburban Residence for the King of Würtemberg	18—22
177.	Church at Charmouth	509	12—14.	Mountain Cottage of Switzerland	58, 59
			15.	Swiss Cottage in the Canton of Uri	63

27, 28. Labourer's Cottage, or Gate Lodge	74
42—51. Labourer's Cottages erected in Ca. shiboury Park	116—120
168—170. House and Garden for an Invalid	460—463
188—190. A Villa comprising Two distinct Residences	556—564

Windows.

164—166. Enriched Windows from a Do- mestic Edifice in Munich	441
281—286. Various forms of Windows from Roman and Italian Edifices	651—668

Geometrical Diagrams, &c.

5, 6. Selecting the Position of a House	29
7—9. Bernhardt's Stove Furnace	32
10. Improved Stove Furnace	39
11. Hot-water Apparatus for Hatching Chickens	40
31—34. Parsey's Perspective	93
35—38. Parsey's Perspective	95, 96
74. Boring for Water	177
83—85. Parsey's Perspective	229
90—92. Ventilating a Church	259, 260
99. Parsey's Perspective	282
123, 124. Concrete and other Foundations	363, 364
125, 126. Hitch's Patent Brick Drain	365
128—135. Angular and Curvilinear Lines	398
136—138. Equiform and Symmetrical Orna- ments	403
140—144. Symmetrical and Harmonious Or- naments	404
145—157. Elementary Forms, Angular and Curvilinear	406, 407
158—160. Experimental Arches	409, 410
161—163. Parsey's Perspective	426—428
200—269. German Drinking-Vessels, illus- trative of Weinbrenner's Theory of Architectural Beauty	582—596

Landscapes.

40. Buildings and Scenery close to the City of Aosta	105
71. Coniston Hall, on the Shores of Co- niston Water, Westmoreland	150
86. Bellaggio on the Lago di Como	246
87. Villa Somma-Riva on the Lago di Como	247
100. Villa Porro, on the Lago di Como	390
127. Old English Lowland Villa	295
167. Perspective View of Girard College	447
186. View of a Village on the Lake of Thun	547
279. Ruins at the Foot of Arthur's Seat	633

Engineering.

93. Improved Form for a River Dam	261
-----------------------------------	-----

Furniture.

4. Improved Cottage Pianoforte	28
29. A Temporary Table, or Ironing-Board for Cottagers	75
52. Section of Dr. Arnott's Stove	123
72, 73. A Stove on a new Construction	168—171
82. An Improved Cottage Fire-place	226
94—98. An Architect's Desk	262—265
107—110. Ancient Egyptian Chairs	314, 315
111—114. Ancient Egyptian Stools	316
115. Ancient Egyptian Kangaroo Chair	316
171, 172. A cheap Portable Shower-Bath	468, 469
270—276. An Architectural Bookcase	598—603
277. Design for a Sofa	605
278. New Fastening for a Dressing-Room Swing Glass	605
288, 289. Two American Rocking-Chairs	664, 665

Chimney-Tops.

53—70. Eighteen different Forms of Chim- ney-tops, taken from Buildings in Bri- tain and on the Continent	148
---	-----

Churchyard.

121. Ground-plan for laying out a Church- yard, on laying out and planting on Scientific Principles	357
122. Isometrical View of the Same	359

Tombs.

195—197. Two Monumental Tombs	576, 577
-------------------------------	----------

Miscellaneous.

16—18. Corrugated Cast-Iron Roof	66, 67
19—22. Details of Corrugated Cast-Iron Roof	68, 69
75. Outline of a Mass of Wood	195
88, 89. Balustrades in the Isola Bella	249
101—106. Ancient Architecture	311—314
107—114. Ancient Egyptian Furniture	314—316
115. Curious Alarm Thermometer and Automaton Gardener	335
116, 117. Portico of Petrarch's House at Arqua	339, 340
118—120. Lines of Ground	343, 344
183. Effect of Shade under different Cir- cumstances	542
184, 185. Lines of Ground and Wood	545
187. Flat Line of Beauty	548
198, 199. Patent Rebated Brickwork	579—581
280. Ogee Curve in Ground	633
287. New Instrument to be used in Land- surveying	663
293. Section of the Stage for Plants in the Bedford Conservatories	671
294. Fountain in Covent Garden Market	671

LIST OF CONTRIBUTORS.

A.	-	85	Hance, John Wm.	-	280	Milne, James	-	468
A. J.	-	86	Hawkins, John Isaac, Civil	-	29	N.	-	29
Amicus	-	63, 215, 415	Engineer	-	659	Nemo	-	495
A Provincial Architect	-	1	Hermon, Hermon	-	575	P. A.	-	165
A Subscriber	-	572	H. N. H.	-	90	Parsey, Arthur	-	91, 228, 425
B.	-	139	Humphreys, Henry Noel	-	49	Pocock, jun., William, Wil-	-	92
Bernhardt, F. A.	-	142	110. 140. 648. 1000	-	136	mer	-	92
Blair, C. E. A.	-	105	J. B. W.	-	136	Saul, M.	-	225
Bland, Wm.	-	408	J. M.	-	335	Simpson, James	-	143
B. H.	-	526	J. W. H.	-	46	Slack, T.	-	502
Brigden, Edward	-	74, 223	Kata Phusin	-	7, 56, 94, 97, 105,	Smith, Chappell	-	426, 707
Candidus	-	14, 88, 140, 219, 265,	145, 191, 193, 241, 282, 289, 300,	-	372	T.	-	372
367, 442, 522, 565	-	337, 385, 433, 481, 526, 533, 624,	625	-	255	T. B. W.	-	255
Dyer, Charles	-	425	L.	-	190, 604	T. K.	-	459
Eales, C.	-	510	Lamb, E. B., F.I.B.A.	-	18, 27,	T. W. S.	-	142
E. B. L.	-	91	159, 262	-	138	Thorold, Wm.	-	138
Edington, Harvey	-	192	Leeds, W. H.	-	554	W.	-	499
E. H.	-	283	Lush, Frederick	-	136, 198, 230,	W. F. D.	-	605
Fowler, C. F., I. B. A.	-	509	320, 478, 479, 521, 624	-	88	W. H.	-	88
Frewin, James, Builder	-	664	M.	-	162	Walter, T. N.	-	327
G.	-	136, 227, 330	M. D.	-	66	Walter, U.	-	446
G. B. W.	-	45, 192, 330, 598	M. I. B. A.	-	189, 276	White, Henry B.	-	143
Godwin, George, jun.,	-	250, 304,	M. L.	-	154, 392, 581	Ure, Andrew, M.D., F.R.S.,	-	31, 182
F.S.A. and M.I.A.	-	361, 411, 464, 514, 577	Mallet, R.	-	167, 258, 261	&c.	-	31, 182
VOL. V.	-			-		Varden, Richard, Architect	-	663

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THE
ARCHITECTURAL MAGAZINE.

JANUARY, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *Remarks on the present State of Architecture in Britain, and on the Institute of British Architects.* By a PROVINCIAL ARCHITECT.

THE times in which we live, as regards the internal construction and advance of society, are, perhaps, the most remarkable in the history of the human race. By-gone ages may have been more fertile in those incidents on which historians love to dilate; the march of conquerors, the change of dynasties, the vicissitudes of coronets, and the fate of crowns; but in this period the very elements of society are in motion, the fountains of the deep are breaking up, and out of its chaos new combinations are continually taking place, presenting new aspects, changing, as in a moment, the current of our ideas, and sweeping away the accumulated prejudices of centuries. Every subject to which the human mind has been directed partakes of this onward movement: the sciences of legislation, political economy, chemistry, mechanics, geology; every study, in short, which tends to enlarge the boundaries of human knowledge, to extend man's dominion over the material elements, and consequently to increase his comforts and enjoyments; all these have made, and are making, every year prodigious advances.

The science of architecture has, at last (tardily enough, it must be owned), caught something of the general impulse, which, indeed, it was scarcely possible to avoid, without being swamped by the advancing tide of popular opinion: the attention of the architectural world has been aroused to the necessity for keeping pace with the progress of knowledge in other departments, and it has been admitted on all hands that something must be done. What that something should be, however, seemed a matter of some difficulty and doubt. The first thing naturally required was to excite an interest in the public mind, and more especially amongst those connected with the art; to stimulate a thirst for improvement, and awaken dormant capabilities wherever they might be found: the second step would be consequent upon the other, to concentrate the energies so excited, and direct them by the simplest means to the accomplishment of the most desir-

able ends. In respect to the first of these desiderata, a great point was gained when it was demonstrated by yourself, in the publication of your *Encyclopædia of Cottage, Farm, and Villa Architecture*, that architectural works are not necessarily either expensive or full of technicalities; that these two obstacles in the way of the general diffusion of sound principles of taste may be avoided to a very great extent by care and attention. The establishment of this Magazine, also, by circulating information of the proceedings in the architectural world (a region, up to that period, veiled in as much obscurity as the sources of the Nile, or the kingdom of Timbuctoo), and by exciting discussion on the various subjects connected with design and construction, did much to remove the difficulties in the way of progressive improvement. Something, however, was still wanting. The desultory and unaided efforts of individuals, however talented and zealous, in any cause, can never produce the effect of a well-organised simultaneous combination of exertion. A guiding and directing power was required to unite the desultory energies, to marshal the scattered forces; and, by a well-directed division of labour, united with the most extensive combination of efforts, to produce similar effects to those which have so happily resulted in other arts and sciences.

Apparently with views something similar to these, the Institute of British Architects was called into existence. Earl De Grey, at the opening meeting, remarked that "This Society is formed for the cultivation of an art which can only be understood and appreciated by those who make it their study." It must, therefore, follow, that the greater the number of individuals who can be induced "to make it their study," the more will the art "be understood and appreciated." After mentioning in detail some of the benefits expected to result from the establishment of the Society, the noble lord goes on so say, "If we can only succeed in establishing this institution on the *broad ground and footing* which I think we may, then we shall have an opportunity of deriving a greater acquaintance with the resources of the art." In the address prefixed to the published part of the *Transactions*, it is stated that, "the general objects of the institution are, in few words, the promotion and encouragement of the art and science which the founders profess, by all the means in their power." It is also stated that, "without aid beyond the circle of its professional members, it will at first, perhaps, be difficult to carry such a society into full effect." The passages here quoted would appear to indicate that the combination of efforts above alluded to in one common pursuit, the advancement of architectural science, was the leading principle of the Association; and that such was the only object of its original founders I have very little doubt. It is therefore much to be regretted that anything like an exclusive spirit should have crept in; and that, in attempting to carry out an object so desirable, regulations

should have been adopted at all fettering its usefulness, and forbidding the active cooperation of any persons able and willing to contribute materially to its success. I allude more particularly to the 21st clause of Section 4. of the By-Laws, which renders ineligible, or liable to expulsion, any fellow or associate "for having engaged since his election in the measurement or valuation of any works undertaken by any building artificer, except such as are proposed to be executed under the member's own designs or directions, or for the receipt or acceptance of any pecuniary consideration or emolument from any builder whose works he may have been engaged to superintend," &c. If this be the "broad ground and footing" alluded to by Earl De Grey, His Lordship's notions of breadth must be rather peculiar; for it is scarcely possible to imagine a narrower or more exclusive base on which to found a society. However, laying aside all disputes as to the breadth of the base, this Society has now been established two years and a half, the wealthy and noble of the land are enrolled amongst its honorary members; Eastern potentates have not disdained to shed upon it the lustre of their magnificence; royalty itself has put the seal of its sanction to the proceedings by the charter of incorporation; and yet, notwithstanding all these advantages, in spite of the distinguished position the Society has attained, the last report is obliged to confess that "it is matter of regret that the lectures (delivered by first-rate professors on most interesting subjects) did not command a larger number of auditors." Again, "The subjects proposed for prize essays not having been successful, it is to be hoped that they will, at some future opportunity, be productive of happier results," &c. How is this? How comes it to pass that, with all these advantages and inducements to the study of their art, the junior members of the profession will neither attend the lectures, nor enter into competition for the prizes held out to their acceptance? The true answer is, the system is too exclusive: —

"Non tali auxilio, nec defensoribus istis
Tempus eget."

The stirring times in which we live demand something of a more diffusive and expansive character. If the tree is to bear fruit at all, it must be planted in soil sufficiently deep; its roots must have liberty to shoot out and extract nourishment from every source, which, distilled and elaborated by the parent trunk, may expand into hardy health, vigour, and fruitfulness. Cribbed, cabined, and confined, without depth of earth, or room for expansion, it will exhibit, at best, but a stunted and sickly growth; a feeble exotic, which the first rude blast will level with the dust.

But, to drop metaphor, I propose to show, in the following

pages, that the present exclusive system of the Institute is unjust in principle, impolitic in practice, and that it never can realise the expectations of its founders.

In establishing an association of persons engaged in one common pursuit, either of two principles may be adopted: it may be a society purely for the advancement of art, without reference to the private interests of the members, or it may be an association for the protection of the interests of a profession, or, in other words, a trade union. I have no objection to a society formed on either of these principles; but I think a little consideration will show that their union in one society is incompatible. The one knows no test but that of merit, and no distinction but the various degrees of zeal in the advancement of science; the other jealously fences itself round with arbitrary restrictions and enactments; treats as intruders and poachers on its own preserve those whose shibboleth of technicalities differs from its own: and would rather the cause of science stood still, except its own particular clique could beat the head. The Institute is professedly established on the first of these principles: it claims the support and confidence of the public as a purely scientific association, which confidence it attempts to convert, by its restrictive enactments, into a source of private advantage. Indeed, this is unwittingly allowed to escape in the first address, where it is stated, that one object of the Institute is that “of gaining at the hands of the public a reliance on those professors who are *bonâ fide* architects;” that is, in other words, that no practising architect is worthy of being trusted who is not a member of the Institute. This, if the Institute were open to all who are eligible on the score of merit, could hardly be complained of, though it must be a “broad ground” indeed which would justify the proposition; but, on its present foundation, to assume that all talent and merit, either now or at any future time, would centre in the Institute, is neither more nor less than a fraud upon the public.

Again, architecture is the science of construction; an architect, therefore, is not merely a person capable of sketching a design, or of finishing a showy drawing; but the chief builder, as the word implies; one capable of entering into all the details of every branch of artificer’s work, of understanding the prices of each, and the method of putting together. I need not inform the practical architect how much design and ornament depend upon the material and construction employed; and, as to prices and value, it is notorious that the architects of the present day are lamentably deficient in practical knowledge on these subjects; so much so, that the discrepancy between the architect’s estimate and the real cost of a building has become proverbial. Now, where is the student to obtain a competent knowledge on these points? The time usually spent in an architect’s office is little

enough to gain a general acquaintance with the principles of design; and, if a young man is desirous to obtain a practical knowledge of the various modes of construction adopted, and of prices and value of work, it can only be acquired by measuring and surveying. To affix a stigma, therefore, on a branch of knowledge quite as essential to the thorough architect as any other, has a direct tendency to cause it to be undervalued by the student, as unworthy of attention, and derogatory to his professional character, and is both absurd and unjust.

But, again, the principal object the Institute professes is the “facilitating the acquirement of architectural knowledge.” Now, to whom does it offer these facilities? To the young practitioner of limited means, to whom advantages of this kind would be acceptable? Does it tend to draw merit from obscurity, and lend its helping hand to foster genius wherever it may be found? No such thing: it offers its “facilities” to two classes; to the architect in the bustle and activity of full practice, to whom they are unnecessary, and to the young professor, whose means enable him to wait with patience until the tide of public approbation shall set in his favour. But, supposing the case of a young enthusiast, whose love for the art has enabled him to force his way through difficulties and obstacles, and who, whilst maturing his talents for public competition, is honourably maintaining himself in the only way open to him, that of measuring and surveying; to him the door of admission is bolted and barred; the cold supercilious glance of contempt is cast on his exertions; should he fail, no helping hand of assistance is stretched out to him; and should he succeed, the success is all his own. To call such a society an institution for “facilitating the acquirement of architectural knowledge,” is a burlesque and a mockery.

I could go into this part of the subject at much greater length; I might put it to the candour and conscience of the fellows themselves, whether this regulation is uniformly put in force; I might ask whether the donation of twenty-five guineas (which amount admits an honorary member to all the real privileges of the Society) is more likely to promote the progress of architectural knowledge than the admission of their *half*-brethren in the profession; but I forbear, at least for the present, and proceed to offer a few words on the impolicy of the restrictions.

Scarcely can any publication, at all treating on architecture, be taken up, but it is either full of lamentations on the low state of the art in this country, or, if written by an architect, it is filled with loud and deep complaints of the want of taste in the public, and of opportunities for the display of architectural skill. Both these complaints originate in the same source, the want of sympathetic taste and common feeling between the

public, who are the employers, and the professors, who are the *employés*. This diversity of feeling can only be removed by the principles of correct taste being diffused as extensively as possible; in the first instance, embracing all in any way connected with the art, and, through them, being extended to the public. If it be not thus, it will be in vain for those who consider themselves first-rate professors of the art to expect admiration for the fruits of their talents exhibited to the public. They will still be "*caviare* to the multitude;" and, even amongst the architects themselves, the same carping hypercriticism which at present prevails will still be perpetuated; but once let the same common principles of taste obtain currency in the public mind, and talent will only need to be displayed to be fully appreciated; that narrow sectarian jealousy, which would rather lower others to its own standard, than elevate itself to theirs, would produce no effect, for there would not exist the ignorance and prejudice to which it could appeal. I maintain, therefore, that it is for the interest of the architects *par excellence* to throw open their doors as wide as possible. Besides, there is at the present day a great degree of suspicion attached to every thing exclusive. It is a common adage, that, where there is mystery and exclusion there must be something wrong; and it is natural to question if a society, which can only exist by means of arbitrary distinctions, is worthy of public support at all. Whether it is for the interests of the Institute that it should be exposed to these imputations, I presume not to determine.

The history of architecture offers a remarkable exception to that of the other arts and sciences. Their advance has been, with occasional vicissitudes, gradual and progressive; but architecture, in this respect, affords a singular anomaly. From the twelfth to the fifteenth century, this art was elevated as much above the level of the other sciences of the day, as it has since been depressed below them. This is a fact which cannot be denied, for splendid testimonies to its truth surround us on every side. Tell me not that the cause of this difference was merely the superior encouragement given at that period to the art. If encouragement means lavish expenditure, Buckingham Palace might have far outshone the Parthenon in beauty, and Trafalgar Square have surpassed the Acropolis of Athens in splendour. No: it was the combination, the union of energy, the oneness of feeling, diffused through all connected, however humbly, with the art, which produced such splendid results. The architect and the artisan were then merely links at opposite extremities of a mighty chain, by which all interested in the science were bound together, and through every part of which successive improvements extended with the rapidity of an electric current. I am not visionary enough to suppose that institutions suited to another

state of society could be transplanted, without modification, to the present day ; but I am convinced that, before such a result can be produced as will tell with effect on the architectural science of the country, there must be a much closer approximation to them than is exhibited in the Institute of British Architects.

I write these remarks with no unfriendly feelings towards the Institute. I have read, with much pleasure, their published *Transactions*, and the writings of different members of the body* ; and I am free to admit that it may be considered, to some extent, as comprising the *élite* of the profession. Personally, I have nothing to hope or fear from either admission to, or exclusion from, the Society : I have never applied for admission, and, in all probability, never shall. I will not, however, yield in attachment to the art to any ; and it is purely with this motive that I have now taken up my pen to animadvert on what appears to me a false principle. The Society has been so accustomed to the language of flattery, that it may, perhaps, appear that “ I am become their enemy, because I tell them the truth ; ” nevertheless, I will venture to close with a plain and candid opinion, that, whilst the present exclusive system is continued, their *soirées* may be crowded with the fashionable, the wealthy, and the gay ; they may bask in the smiles of princes, and breathe the intoxicating atmosphere of courts ; but, as a society, mediocrity will be their goal, and, in respect to the profession, they will never be anything more than “ a miserable monopolising minority.”

November 16. 1837.

ART. II. *The Poetry of Architecture.* By KATA PHUSIN.

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II. *The Lowland Cottage.* — *Italy.*

“ Most musical, most melancholy.”

LET it not be thought that we are unnecessarily detaining our readers from the proposed subject, if we premise a few remarks on the character of the landscape of the country we have now entered. It will always be necessary to obtain some definite knowledge of the distinctive features of a country, before we can form a just estimate of the beauties or the errors of its architecture. We wish our readers to imbue themselves as far as may be with the spirit of the clime which we are now entering ;

* I cannot help here mentioning the name of Mr. G. Godwin, Jun., as having done much to rescue the literary character of the profession from obloquy, and expressing a hope that he will go forward in the path he has chosen. Had the Institute never done anything else than develop the talents of this young gentleman, it would not have existed in vain.

to cast away all general ideas; to look only for unison of feeling, and to pronounce every thing wrong which is contrary to the *humours* of nature. We must make them feel where they are; we must throw a peculiar light and colour over their imaginations; then we will bring their judgment into play, for then it will be capable of just operation.

We have passed, it must be observed (in leaving England and France for Italy), from comfort to desolation; from excitement, to sadness: we have left one country prosperous in its prime, and another frivolous in its age, for one glorious in its death.

Now, we have prefixed the hackneyed line of *Il Penseroso* to our paper, because it is a definition of the essence of the beautiful. What is most musical, will always be found most melancholy; and no real beauty can be obtained without a touch of sadness. Whenever the beautiful loses its melancholy, it degenerates into prettiness. We appeal to the memories of all our observing readers, whether they have treasured up any scene, pretending to be more than pretty, which has not about it either a tinge of melancholy or a sense of danger: the one constitutes the beautiful, the other the sublime.

This postulate being granted, as we are sure it will by most (and we beg to assure those who are refractory or argumentative, that, were this a treatise on the sublime and beautiful, we could convince and quell their incredulity to their entire satisfaction by innumerable instances), we proceed to remark here, once for all, that the principal glory of the Italian landscape is its extreme melancholy. It is fitting that it should be so: the dead are the nations of Italy; her name and her strength are dwelling with the pale nations underneath the earth; the chief and chosen boast of her utmost pride is the *hic jacet*; she is but one wide sepulchre, and all her present life is like a shadow or a memory. And, therefore, or, rather, by a most beautiful coincidence, her national tree is the cypress; and whoever has marked the peculiar character which these noble shadowy spires can give to her landscape, lifting their majestic troops of waving darkness from beside the fallen column, or out of the midst of the silence of the shadowed temple and worshipless shrine, seen far and wide over the blue of the faint plain, without loving the dark trees for their sympathy with the sadness of Italy's sweet cemetery shore, is one who profanes her soil with his footsteps. Every part of the landscape is in unison; the same glory of mourning is thrown over the whole; the deep blue of the heavens is mingled with that of the everlasting hills, or melted away into the silence of the sapphire sea; the pale cities, temple and tower, lie gleaming along the champaign; but how calmly! no hum of men; no motion of multitude in the midst of them: they are voiceless as the city of ashes. The transparent air is gentle among the blossoms of the orange and the dim leaves of the

olive; and the small fountains, which, in any other land, would spring merrily along, sparkling and singing among tinkling pebbles, here flow calmly and silently into some pale font of marble, all beautiful with life, worked by some unknown hand, long ago nerveless, and fall and pass on among wan flowers, and scented copse, through cool leaf-lighted caves or grey Egerian grottos, to join the Tiber or Eridanus, to swell the waves of Nemi, or the Larian Lake. The most minute objects (leaf, flower, and stone), while they add to the beauty, seem to share in the sadness, of the whole.

But, if one principal character of Italian landscape is melancholy, another is elevation. We have no simple rusticity of scene, no cowslip and buttercup humility of seclusion. Tall mulberry trees, with festoons of the luxuriant vine, purple with ponderous clusters, trailed and trellised between and over them, shade the wide fields of stately Indian corn; luxuriance of lofty vegetation (catalpa, and aloe, and olive), ranging itself in lines of massy light along the wan champaign, guides the eye away to the unfailing wall of mountain, Alp or Apennine; no cold long range of shivery grey, but dazzling light of snow, or undulating breadth of blue, fainter and darker in infinite variety; peak, precipice, and promontory passing away into the wooded hills, each with its tower or white village sloping into the plain; castellated battlements cresting their undulations; some wide majestic river gliding along the champaign, the bridge on its breast and the city on its shore; the whole canopied with cloudless azure, basking in mistless sunshine, breathing the silence of odoriferous air. Now comes the question. In a country of this pomp of natural glory, tempered with melancholy memory of departed pride, what are we to wish for, what are we naturally to expect, in the character of her most humble edifices; those which are most connected with present life, least with the past? What are we to consider fitting or beautiful in her cottage?

We do not expect it to be comfortable, when every thing around it betokens decay and desolation in the works of man. We do not wish it to be neat, where nature is most beautiful, because neglected. But we naturally look for an elevation of character, a richness of design or form, which, while the building is kept a cottage, may yet give it a peculiar air of cottage aristocracy; a beauty (no matter how dilapidated) which may appear to have been once fitted for the surrounding splendour of scene and climate. Now, let us fancy an Italian cottage before us. The reader who has travelled in Italy will find little difficulty in recalling one to his memory, with its broad lines of light and shadow, and its strange, but not displeasing mixture of grandeur and desolation. Let us examine its details, enumerate its architectural peculiarities, and see how far it agrees with our preconceived idea of what the cottage ought to be?

The first remarkable point of the building is the roof. It generally consists of tiles of very deep curvature, which rib it into distinct vertical lines, giving it a far more agreeable surface than that of our flatter tiling. The *form* of the roof, however, is always excessively flat, so as never to let it intrude upon the eye; and the consequence is, that, while an English village, seen at a distance, appears all red roof, the Italian is all white wall; and, therefore, though always bright, is never gaudy. We have in these roofs an excellent example of what should always be kept in mind, that every thing will be found beautiful, which climate or situation render useful. The strong and constant heat of the Italian sun would be intolerable if admitted at the windows; and, therefore, the edges of the roof project far over the walls, and throw long shadows downwards, so as to keep the upper windows constantly cool. These long oblique shadows on the white surface are always delightful, and are alone sufficient to give the building character. They are peculiar to the buildings of Spain and Italy; for, owing to the general darker colour of those of more northerly climates, the shadows of their roofs, however far thrown, do not tell distinctly, and render them, not varied, but gloomy. Another ornamental use of these shadows is, that they break the line of junction of the wall with the roof: a point always desirable, and in every kind of building, whether we have to do with lead, slate, tile, or thatch, one of extreme difficulty. This object is farther forwarded in the Italian cottage, by putting two or three windows up under the very eaves themselves, which is also done for coolness, so that their tops are formed by the roof; and the wall has the appearance of having been terminated by large battlements, and roofed over. And, finally, the eaves are seldom kept long on the same level: double or treble rows of tiling are introduced; long sticks and irregular woodwork are occasionally attached to them, to assist the festoons of the vine; and the graceful irregularity and marked character of the whole; must be dwelt on with equal delight by the eye of the poet, the artist, or the unprejudiced architect. All, however, is exceedingly humble; we have not yet met with the elevation of character we expected. We shall find it, however, as we proceed.

The next point of interest is the window. The modern Italian is completely owl-like in his habits. All the day-time, he lies idle and inert; but during the night he is all activity: but it is mere activity of inoccupation. Idleness, partly induced by the temperature of the climate, and partly consequent on the decaying prosperity of the nation, leaves indications of its influence on all his undertakings. He prefers patching up a ruin to building a house; he raises shops and hovels, the abodes of inactive, vegetating, brutish poverty, under the protection of the aged and

ruined, yet stalwart, arches of the Roman amphitheatre ; and the habitations of the lower orders frequently present traces of ornament and stability of material evidently belonging to the remains of a prouder edifice. This is the case sometimes to such a degree as, in another country, would be disagreeable from its impropriety ; but, in Italy, it corresponds with the general prominence of the features of a past age, and is always beautiful. Thus, the eye rests with delight on the broken mouldings of the windows, and the sculptured capitals of the corner columns, contrasted, as they are, the one with the glassless blackness within, the other with the ragged and dirty confusion of drapery around. The Italian window, in general, is a mere hole in the thick wall, always well proportioned ; occasionally arched at the top, sometimes with the addition of a little rich ornament ; seldom, if ever, having any casement or glass, but filled up with any bit of striped or coloured cloth, which may have the slightest chance of deceiving the distant observer into the belief that it is a legitimate blind. This keeps off the sun, and allows a free circulation of air, which is the great object. When it is absent, the window becomes a mere black hole, having much the same relation to a glazed window that the hollow of a skull has to a bright eye ; not unexpressive, but frowning and ghastly, and giving a disagreeable impression of utter emptiness and desolation within. Yet there is character in them : the black dots tell agreeably on the walls at a distance, and have no disagreeable sparkle to disturb the repose of surrounding scenery. Besides, the temperature renders every thing agreeable to the eye, which gives it an idea of ventilation. A few roughly constructed balconies, projecting from detached windows, usually break the uniformity of the wall. In some Italian cottages there are wooden galleries, resembling those so frequently seen in Switzerland ; but this is not a very general character, except in the mountain valleys of North Italy, although sometimes a passage is effected from one projecting portion of a house to another by means of an exterior gallery. These are very delightful objects ; and, when shaded by luxuriant vines, which is frequently the case, impart a gracefulness to the building otherwise unattainable.

The next striking point is the arcade at the base of the building. This is general in cities ; and, though frequently wanting to the cottage, is present often enough to render it an important feature. In fact, the Italian cottage is usually found in groups. Isolated buildings are rare ; and the arcade affords an agreeable, if not necessary, shade in passing from one building to another. It is a still more unfailing feature of the Swiss city, where it is useful in deep snow. But the supports of the arches in Switzerland are generally square masses of wall, varying in size, separating the arches by irregular intervals, and sustained by broad

and massy buttresses ; while, in Italy, the arches generally rest on legitimate columns, varying in height from one and a half to four diameters, with huge capitals, not unfrequently rich in detail. These give great gracefulness to the buildings in groups : they will be spoken of more at large when we are treating of arrangement and situation.

The square tower, rising over the roof of the farther cottage, will not escape observation. It has been allowed to remain, not because such elevated buildings ever belong to mere cottages, but, first, that the truth of the scene might not be destroyed ; and, secondly, because it is impossible, or nearly so, to obtain a group of buildings of any sort, in Italy, without one or more such objects rising behind them, beautifully contributing to destroy the monotony, and contrast with the horizontal lines of the flat roofs and square walls. We think it right, therefore, to give the cottage the relief and contrast which, in reality, it possessed, even though we are at present speaking of it in the abstract.

Having now reviewed the distinctive parts of the Italian cottage in detail, we shall proceed to direct our attention to points of general character. 1. Simplicity of form. The roof, being flat, allows of no projecting garret windows, no fantastic gable ends : the walls themselves are equally flat ; no bow-windows or sculptured oriels, such as we meet with perpetually in Germany, France, or the Netherlands, vary their white fronts. Now, this simplicity is, perhaps, the principal attribute by which the Italian cottage attains the elevation of character we desired and expected. All that is fantastic in form, or frivolous in detail, annihilates the aristocratic air of a building : it at once destroys its sublimity and size, besides awakening, as is almost always the case, associations of a mean and low character. The moment we see a gable roof, we think of cocklofts ; the instant we observe a projecting window, of attics and tent-bedsteads. Now, the Italian cottage assumes, with the simplicity, *l'air noble* of buildings of a higher order ; and, though it avoids all ridiculous miniature mimicry of the palace, it discards the humbler attributes of the cottage. The ornament it assumes is dignified : no grinning faces, or unmeaning notched planks, but well-proportioned arches, or tastefully sculptured columns. While there is nothing about it unsuited to the humility of its inhabitant, there is a general dignity in its air, which harmonises beautifully with the nobility of the neighbouring edifices, or the glory of the surrounding scenery.

2. Brightness of effect. There are no weather stains on the walls ; there is no dampness in air or earth, by which they could be induced ; the heat of the sun scorches away all lichens, and mosses, and mouldy vegetation. No thatch or stone crop on the roof unites the building with surrounding vegetation ; all is

clear, and warm, and sharp on the eye; the more distant the building, the more generally bright it becomes, till the distant village sparkles out of the orange copse, or the cypress grove, with so much distinctness as might be thought in some degree objectionable. But it must be remembered that the prevailing colour of Italian landscape is blue; sky, hills, water, are equally azure: the olive, which forms a great proportion of the vegetation, is not green, but grey; the cypress, and its varieties, dark and neutral, and the laurel and myrtle far from bright. Now, white, which is intolerable with green, is agreeable contrasted with blue; and to this cause it must be ascribed that the white of the Italian building is not found startling or disagreeable in the landscape. That it is not, we believe, will be generally allowed.

3. Elegance of feeling. We never can prevent ourselves from imagining that we perceive, in the graceful negligence of the Italian cottage, the evidence of a taste among the lower orders refined by the glory of their land, and the beauty of its remains. We have always had strong faith in the influence of climate on the mind, and feel strongly tempted to discuss the subject at length; but our paper has already exceeded its proposed limits, and we must content ourselves with remarking what will not, we think, be disputed, that the eye, by constantly resting either on natural scenery of noble tone and character, or on the architectural remains of classical beauty, must contract a habit of feeling correctly and tastefully; the influence of which, we think, is seen in the style of edifices the most modern and the most humble.

Lastly, Dilapidation. We have just used the term "graceful negligence:" whether it be graceful, or not, is a matter of taste; but the uncomfortable and ruinous disorder and dilapidation of the Italian cottage is one of observation. The splendour of the climate requires nothing more than shade from the sun, and occasionally shelter from a violent storm: the outer arcade affords them both: it becomes the nightly lounge and daily dormitory of its inhabitant, and the interior is abandoned to filth and decay. Indolence watches the tooth of Time with careless eye and nerveless hand. Religion, or its abuse, reduces every individual of the population to utter inactivity three days out of the seven; and the habits formed in the three regulate the four. Abject poverty takes away the power, while brutish sloth weakens the will; and the filthy habits of the Italian prevent him from suffering from the state to which he is reduced. The shattered roofs, the dark, confused, ragged windows, the obscure chambers, the tattered and dirty draperies, altogether present a picture which, seen too near, is sometimes revolting to the eye, always melancholy to the mind. Yet even this many would not wish to

be otherwise. The prosperity of nations, as of individuals, is cold, and hard-hearted, and forgetful. The dead die, indeed, trampled down by the crowd of the living; the place thereof shall know them no more, for that place is not in the hearts of the survivors for whose interest they have made way. But adversity and ruin point to the sepulchre, and it is not trodden on; to the chronicle, and it doth not decay. Who would substitute the rush of a new nation, the struggle of an awakening power, for the dreamy sleep of Italy's desolation, for her sweet silence of melancholy thought, her twilight time of everlasting memories?

Such, we think, are the principal distinctive attributes of the Italian cottage. Let it not be thought that we are wasting time in the contemplation of its beauties; even though they are of a kind which the architect can never imitate, because he has no command over time, and no choice of situation; and which he ought not to imitate, if he could, because they are only locally desirable or admirable. Our object, let it always be remembered, is not the attainment of architectural data, but the formation of taste. — *Oct. 12. 1837.*

ART. III. *Candidus's Note-Book.*

Fasciculus X.

“Sicut mens est mos,
Nescio quid meditans nugarum; et totus in illis.”

I. THERE are two sets of persons whom an architect has to endeavour to please, but whose demands are so opposite, that he generally ends by satisfying neither; for the one expect him to be able to show precedent for every thing in his designs; while the others cry out loudly for originality. Nay, this is not the worst; since there are people who insist upon his giving them something perfectly original—quite out of the common way, and then are dissatisfied because every thing is not quite commonplace. The cry then is, “Where did one ever see this done before? what authority have you for doing that? where could the man pick up that idea? what could induce him to introduce this?” Good souls! they do not want such new-fangled things, not they: the originality they admire is not of the “spick and span” new kind, but of the sober “ready cut and dry” sort, all ready made in Stuart's *Athens*. Well, among the qualifications of an architect, Vitruvius, who insists upon so many, has certainly left out of the list the most important and indispensable one of all, the patience of a Job.

II. “I do not approve of tampering with columns,” said a friend to me not long ago. “Can we ever have anything better

than the ancient examples?" *Scusate* : — In the first place, you prejudge, by employing a term intended to insinuate that the result must of necessity be an unhappy one; in the next, you would limit art itself to what it has accomplished, denying the possibility of its making any fresh achievements. As you say, we might go on merely repeating what has been done before, and done so excellently, that we ought to despair of doing better, or even so well. Nor do I know that I can give a more suitable reply wherefore we should not be so content, than by starting another question: Wherefore should we not proceed a step further in content, and be content to dismiss our solicitude about such matters altogether; and enter into compromise to forego all enjoyment, in order, at the same time, to escape all trouble, annoyance, chagrin, in one expressive word, all the *botheration*, they occasion us? After all, art is not the world's daily bread; it can shift without it: at all events, people frequently put up with, and pass as current, the mere Brummagem counterfeit of it.

III. Every body has a fling at the National Gallery, against which he conceives he may jerk a morsel of criticism with perfect impunity, it having been made a sort of outlaw and Pariah, whom no one is called upon to defend. Fortunately, some of the missiles directed against it are not very sharp, neither pointed nor acute; little better, in truth, than so much mud, serving well enough to bespatter, but inflicting no very serious wound. One accusation against the building is, that it is too low; that its height is not at all in proportion to its length; that is, it is of long, and not of lofty, proportions. Yet, surely, this cannot very reasonably be construed as an imperfection, or as contradictory to the external character suitable for such an edifice, wherein we very naturally look for magnitude of length, not that of height. But people have got it into their heads that loftiness is a most excellent quality, and accordingly make it a *sine quâ non*; quite forgetting that, like most other qualities, its excellence is not positive, but relative, and that it ceases to be meritorious if misplaced and misapplied. In proof of this, what is heaviness, but misapplied solidity? or what is flimsiness, save misapplied lightness and delicacy? poverty, than misapplied simplicity? tawdriness, than misapplied and exaggerated embellishment? It is the same, in regard to such qualities, as it is to colours: the most beautiful, or such as are generally acknowledged to be such, become absolutely frightful, almost horrifying, when misplaced. Do you question this? Go, then, and fall in love with a pea-green complexion, azure cheeks, snowy hair, jet-black lips and teeth, and rosy eyes of "love's own proper hue." Why do you start back as from a monster, when, according to your own principles of criticism, or else criticism without prin-

ciples, the snowiness, and the azureness, and the rosiness, being all very captivating qualities in themselves, you ought to be enraptured with them?

IV. What chiefly, I suppose, recommends Elizabethan ornament is, that patterns for it may be made very expeditiously, and quite at hap-hazard, without study, or even thought. In fact, nothing more is requisite than to fold up a sheet of paper, and then, with a pair of scissors, cut as many or few twistings, notchings, and zig-zags as you please. Of this process, some whimsical pattern is sure to be the result; perhaps as good as the very best, certainly not at all uglier than the generality of Elizabethan monstrosities. *Probatum est.*

V. Little as I admire the front of the new Marine Assurance Office, Cornhill, I feel grateful to the architect for having clapped a specimen of Italian Ionic cheek-by-jowl close to a Grecian one; and, as his columns differ very little as to size from those of the Norwich Union, he has thus furnished us with a most striking contrast; one which shows, beyond what words can express, the utter dissimilarity between the two styles. It really required some courage in him to take up his station by the side of such a malicious tell-tale next door neighbour. What miserably stunted, misshapen, and grotesque things are the Italian capitals in comparison with the Greek ones! They are Ionic after the fashion of *lucus a non lucendo*; for of their origin they betray no more than what serves to convict them of utter degeneracy.

VI. Either his printer must have lost several pages of copy, or Mr. T. Roscoe must be the prince of practical hoaxers; for, after promising us, at the head of his fifth chapter, in the new volume of the *Landscape Annual*, something about the "Public Edifices of Saragossa," he fudges us off with the following bit of "ready cut and dried:"—"The artist and amateur might spend days and weeks no less profitably, than with delight, in exploring the treasures of the religious edifices, the colleges, and old convents of Saragossa." It is certainly not credible, yet it is a stubborn fact, that the above is the sum total of Mr. Roscoe's information. Consequently, we must suppose he has no amateurship for such things, or, at all events, that *he* did not spend *his* time so profitably as he assures us others may do in examining the buildings of that city. It were almost charitable to imagine that the writer is one of those travellers who require no locomotive power whatever. One of the plates, however, gives a view of the Torre Nueva, or Leaning Tower, at Saragossa; which is not only a wonder of its kind, but absolutely miraculous; since it inclines so much, that the centre of gravity falls greatly beyond the base. With singular *naïveté*, Mr. Roscoe tells us "it has evidently lost its perpendicular altitude." Ay, evidently enough!

it being about midway between a perpendicular and horizontal position; and I conceive the artist must have been "evidently out of his perpendicular altitude" when he sketched it, consequently not in a condition to be over and above exact and scrupulous. Ponz merely says that it is *algo ladeada* (somewhat on one side or awry); but here it is made so much awry, that one cannot look at it without making a wry face.

VII. Here are two bitter pills for Mr. Gwilt: the first is, that *Schinkelism* has actually crossed the Atlantic; for the *façade* of the Berlin Museum has been followed in the design for the new Exchange at New York. The next is, that, regardless of his anathema on that piece of architecture, a correspondent of the *Athenæum*, who writes from Berlin, has just spoken of it in the following terms: — "In the classic taste, it is, perhaps, the most remarkable building in the century; and, beyond all but a doubt, the most beautiful. Nothing so perfectly elegant can be more perfectly simple. There is a sweetness of effect, if I may so express myself, in this beautiful colonnade, which at first sight passes for positive enchantment, and charms on repeated view, like a lovely face within which is seated an intelligent soul. To be simple, yet striking; unfantastic, yet original; seems the *arcanum magnum* which modern architects have so seldom discovered; and, truly, not often lost their precious time in search of." What will Mr. Gwilt say? why, that the writer is unacquainted with the first principles of architecture; for, speaking of this edifice and of the *Foreign Quarterly* reviewer's description of it, he tells us, "It is easy to conceive how a person unacquainted with the first principles of architecture, *which the reviewer evidently is*, may have his eye dazzled and carried away" (odd expression that!) "by a colonnade of so great an extent: but the eye of the educated architect is not satisfied with a meagre display of this sort. The want of variety, and of light and shade consequent, renders the mass uninteresting: it has no feature; all is sameness." Meagre display, indeed! I wish Mr. Gwilt would enlighten the world by publishing some design of his own, exemplifying his ideas of richness. However, as he has not taken any notice in his *Appendix* of the contradiction with which the *Foreign Quarterly* reviewer twitted him, in first accusing the building with being meagre, and deficient in variety and light and shade, and then immediately adding that it is more like the composition of a scene painter than an architect; that is, essentially scenic. I suppose he found that he had muddled the matter completely, and let the world see that his own judgment was gone away to bear the reviewer's eye company. To return to the writer in the *Athenæum*, I ought to observe that, in what he afterwards says, he greatly qualifies, almost indeed neutralises, his previous

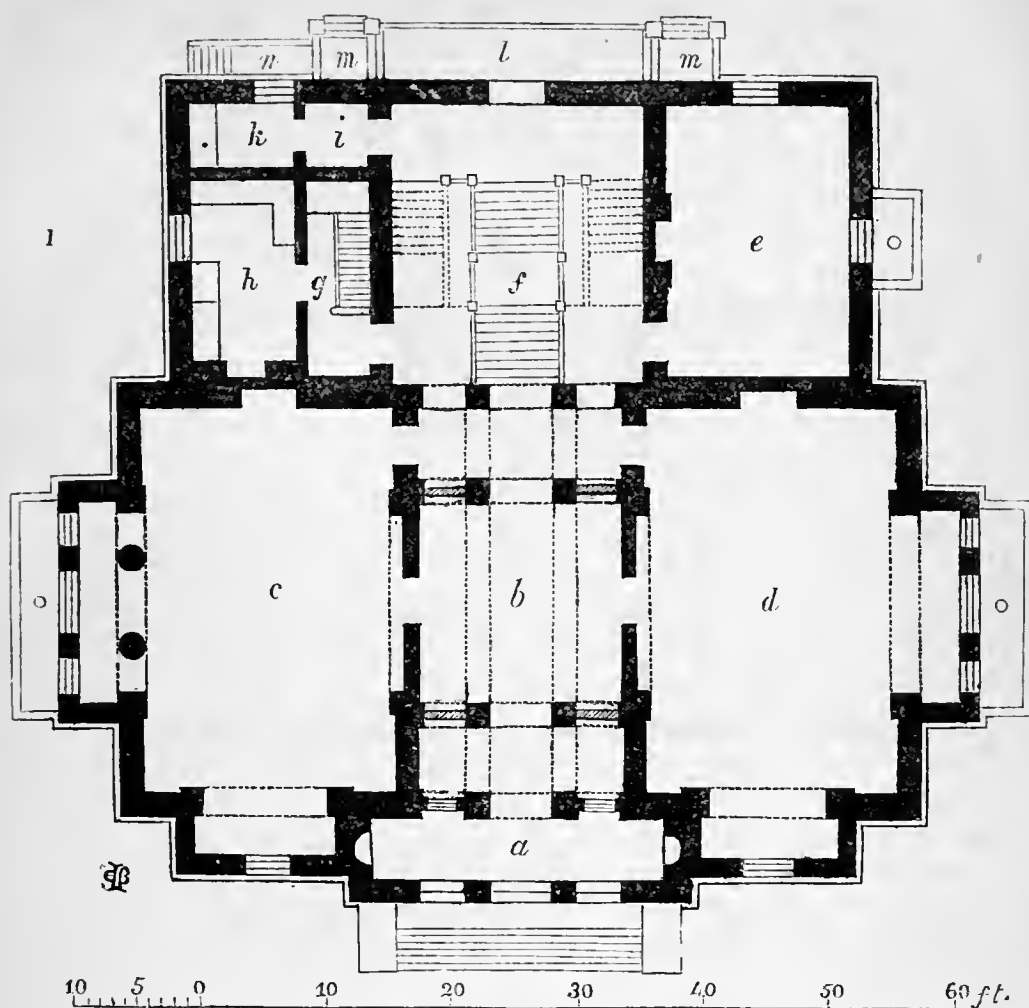
commendation; inasmuch as, according to him, the entablature is so extremely light, that the columns appear almost "to support nothing." Undoubtedly, the cornice would have been all the better had there been additional mouldings beneath those immediately under the corona, more especially as the frieze is plain; yet both that member and the whole entablature have the same proportions assigned to them, as in the usual Grecian examples. It is further objected, that the square mass which screens the upper part of the dome seems a double crime against *harmony* and *economy*. This I cannot help considering no better than hypercriticism. Most certainly, such form does not accord with the internal dome; but, then, it is not seen within the building; and it certainly does harmonise better with the exterior where it is visible, than a flattish dome would have done. Neither that much can be alleged against it on the score of economy, since to have rendered the dome itself at all an effective feature externally, would have been attended with as great, if not even greater, expense. Besides, if we once begin to countenance objections of that kind, we shall suffer ourselves to be led on until we give up our own St. Paul's to reprobation; because there, in utter defiance of such principles of economy, Wren has not only built an external dome, enclosing the inner one, but has placed an entire upper order along the sides of his building, merely to give those elevations sufficient height, and to screen the roof and buttresses over the side ailes. Consequently, if Schinkel is to be censured, our own Sir Christopher must appear a very far greater offender.

ART. IV. *Design for a Suburban Residence to be erected at Stuttgart, by Direction of His Majesty the King of Würtemberg.* By E. B. LAMB, Fellow of the Royal Institute of British Architects.

ABOUT the end of the year 1836, I received instructions from His Excellency the Count Mandelsloh to prepare a design for a suburban residence, to be erected in the neighbourhood of Stuttgart, by direction of His Majesty the King of Würtemberg.

The main characteristic of the building was to be English, or, rather, Anglo-Italian; of simple design, and to comprise the English modes of fitting up, with open fireplaces and other requisites, so as to give a certain English appearance to the whole design: the object being, in this building, to adapt the best known English comforts to the climate of Germany. These requisites were dictated by His Excellency, and have since been approved by His Majesty.

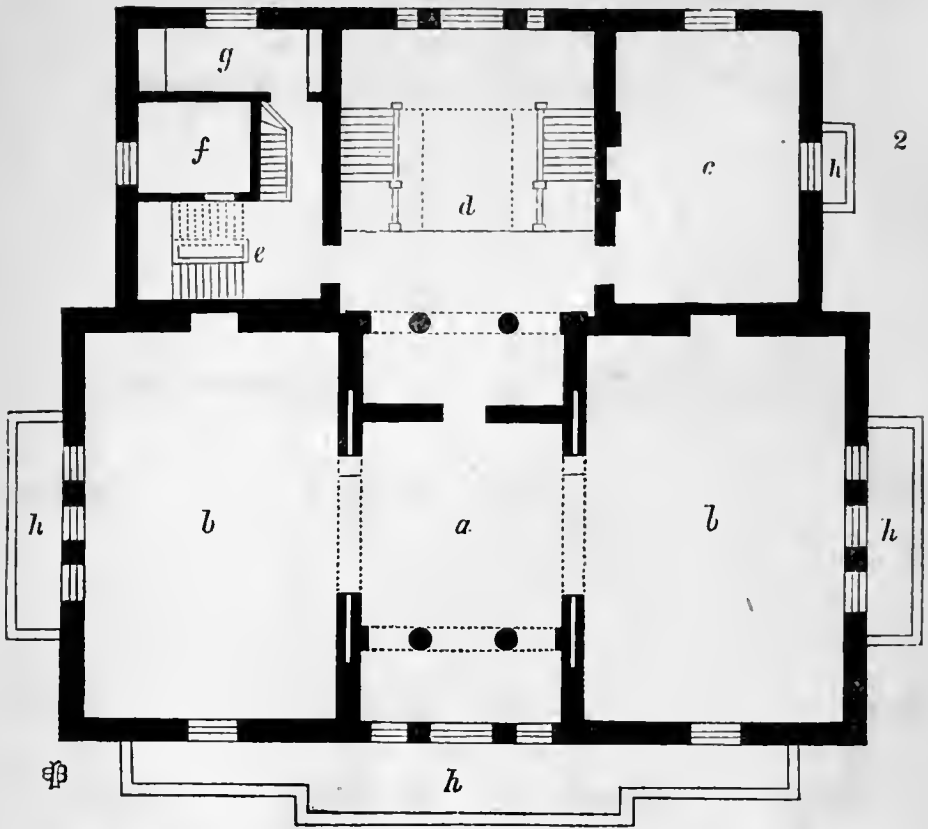
It will be readily seen that there were many difficulties to sur-



mount, and many that were, to a certain degree, insurmountable. For instance, although the cheerful aspect of an open fireplace was a desideratum, if, in our country, it has been found insufficient to warm a tolerably sized room, in a climate so cold in winter as that of Stuttgart the difficulty must be still greater. This rendered it absolutely necessary to provide for heating-stoves, or the hot-water apparatus of this country; and the latter method I preferred, as being less prejudicial to health.

The design comprises, on the basement floor, a kitchen, two pantries, larders, scullery, servants' hall, cellars, housekeeper's room, two bedrooms, servants' washing-room and room for cleaning knives and shoes, wine and beer cellars, fuel cellars, and back entrance.

On the ground floor in *fig. 1*. *a* is a porch; *b*, a hall; *c*, dining-room; *d*, library; *e*, breakfast-room; *f*, principal staircase; *g*, back stairs; *h*, butler's room; *i*, lobby; *k*, water-closet; *l*, balcony; *m m*, steps to the garden; *n*, back entrance to the basement.



On the one-pair floor, *fig. 2.*, *a*, anteroom; *b b*, drawingrooms; *c*, bedroom; *d*, principal staircase; *e*, back stairs and stairs to the principal chamber floor; *f*, butler's bedroom; *g*, water-closet; *h h h h*, balconies.

On the two-pair plan, a sitting-room, bedroom, and dressing-room, *en suite*; the dressing-room supplied with a bath, with hot and cold water laid on; five other bedrooms, closets, &c.

In the upper story, a tank will be fixed for supplying all the bedrooms with water, by means of pipes; and a furnace and boiler will also be fixed in this situation, to which the water will be supplied from the tank by a pipe and ball-cock; pipes from the boiler will also be laid on, to convey the hot water to the bedrooms and baths; and waste pipes will be fixed to the drains. A small furnace will be sufficient for this purpose, which would consume but little fuel; and it might be made to answer the double purpose of heating a room, as well as heating water: the only requisite would be, to have the means of shutting off the communication of heat to the room at pleasure.

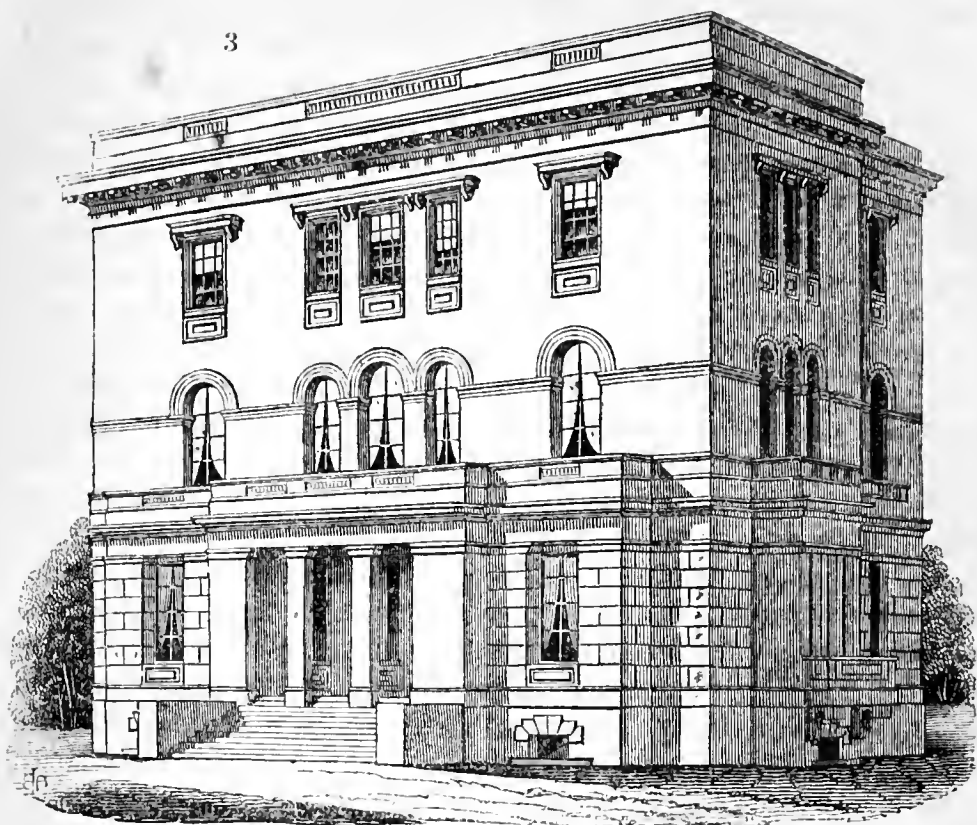
The whole of the kitchen floor will be sunk about 4 ft. below the surface of the ground; and areas will be provided, 18 in. below the floor of the kitchen, of sufficient width to give ample light into the various rooms; and, for the better resistance of the pressure of the ground on the outside, they will be built in curved forms. In the situations where the areas will be intercepted, air-drains are to be constructed from the bottom of the

foundation to the surface of the ground, so as effectually to keep the basement dry. These drains will be at least 12 in. wide, and only intercepted by such bond stones as may be necessary for the security of the work: they will be covered on the top with stone, and, at certain intervals, with iron gratings. As it will be impossible to exclude wet entirely from the air-drains, a small drain will be provided to carry off the water, which may here accumulate, to the main drains. With respect to the other drains, they are to be constructed in such situations as to allow convenient access to them in case of stoppage or want of repair; and only such drains as are absolutely necessary will run through the house. The kitchen, servants' hall, housekeeper's room, and the two bedrooms, will be boarded, and the joists raised on piers, so as to leave clear room for ventilation beneath; and ventilation gratings will be provided, of sufficient number and dimensions to effectually resist that great enemy to buildings called the dry rot. The other parts of the basement will be paved with stone upon brick withs, or piers; the same care being taken to preserve a free circulation of air, as the only means of preventing damp, so easily imbibed by stone. I need scarcely say that all the walls, except those of the cellars, will be plastered and coloured; the housekeeper's room will be papered; the kitchen will be fitted up with dressers, hot closets, oven, boiler, steam apparatus, stoves, and all other culinary utensils of the most approved invention. Hot water will be supplied by means of pipes from the boiler to convenient situations in the kitchen, and where otherwise necessary. The larders and pantries will have some stone, and some wooden shelves, and rails with shifting hooks. The furnace for the heating apparatus will be fixed in the basement.

The porch on the ground floor is to be of stone; and the mouldings of the capital of the antæ will be continued round the inside, so as to form a support, if I may so call it, for the architrave and ceiling to rest upon. The ceiling will be divided into five compartments, and a moulding will go round each panel; the plinth and base moulding will also run round the porch, for the purpose of giving connexion to the design. At each end of the porch, niches will be formed, where figures or candelabra may be placed. The paving within the porch will be of two colours, in octagon and square patterns. The entrance doors will be of oak, and hung folding; the upper panels will be glazed with plate glass.

The hall will possess some variety, though still consistent with its utility; and, from the porch, a sort of vestibule will be formed, by carrying up dwarf partitions between the wall and the pillars, to the height of the doors. By this arrangement, a situation is provided for the porter's chair; and the inner part of the hall is kept clear for communication with the principal entrances to the dining-room and library; the farther end of the hall is also screened in the

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same manner (see the lightly tinted parts of the plan *fig. 1.*). The dining-room door, as well as the entrance to the kitchen, &c., are thus effectually screened, so that servants can supply the dining-room without being seen, or being in the way of company entering the house. These screens will also add considerably to the pictorial effect of the hall. The floor will be paved with two patterns of stone, and the ceiling will be paneled and moulded.

Although the principal part of the decorative painting, sculpture, and glazing in this design will be matter for after-considerations, I will here mention some things which would be suitable to a house of this kind. The paving of the hall being in two colours, the panels of the ceiling should also show some of the same tints. The walls should be of one colour, except such basso-relievos as might be required to decorate it: these should be of a marble tinge, somewhat lighter than the walls; while the beams of the ceiling, being of considerable extent, should be in imitation of wood.

The plinth and moulding of the antæ should be continued all round the hall, being only intercepted by the doors; the architrave and mouldings of the cap should also be continued round. Over, and on each side of the doors, might be placed some appropriate sculpture. Some rather massive seats, characteristic of the style, would help to give effect to this apartment. On entering the dining-room, the appearance will be somewhat picturesque, although the form does not deviate from a regular

figure. The recess opposite the centre door, with columns and some warm-coloured glass in the windows, and the recess at the end, with a single bordered window, will give a sufficient diversity of light to prevent the possibility of the room looking gloomy; at the same time, some depth of shadow at the other end of the room will be reserved, so as to render effective any articles of furniture sufficiently elegant or costly to demand a prominent notice. The columns and pilasters may be of sienna marble; and the walls may be painted to harmonise with them. Round the room, between the pilasters, and within a few inches of the architrave, might be some basso-relievos; which, if of a light cream or buff colour, would contrast admirably with the walls. The whole room will be finished in strict accordance with the design, which is intended to convey an architectural character throughout, avoiding all frivolous parts, which might create confusion, or uncertainty as to their application. Thus, the pilasters will be connected to the walls by continuous mouldings at the cap and the base; the ceiling divided into compartments with beams, of course ornamental, and of sufficient apparent strength to carry its weight; and the paneling of the ceiling painted in such a manner as that there can be no doubt that the material it is intended to represent would be sufficiently strong for the purpose. In ceilings of this kind, much might be done in imitation of various woods, that would produce an exceedingly rich effect; particularly when interspersed with gold mouldings on dark grounds, or bronze on light. Flowers, judiciously placed, might also add greatly to the variety, as well as beauty and richness, of the ceiling. Even heraldic devices might, with their many-coloured bearings, be used with good effect; but, if these latter subjects are employed, the forms should be regular, not like shields, or other things characteristic of the Gothic style. Properly introduced, they would become interesting, by giving a diversity of colour; and many agreeable associations would be created in our minds by such ornaments.

The chimney-piece and shelf should be of the same kind of marble as the columns; the base moulding of the room, as before, continuing round the jambs; which jambs should resemble pedestals placed against the wall, supporting a massive moulded shelf; and the same idea should pervade the whole. The chimney-piece should be equally a part of the design, and unite as well to the main lines as the columns or pilasters; by which means a general harmony will be preserved. There will be no difficulty in uniting the fender to this design, as this, although part of the furniture, still is as much required to preserve the character of the architecture as any other part of the room. As all furniture, when placed in a room, becomes part of the room itself, it is associated with its uses; and, therefore, it

should be united to its forms : it may, in fact, be called the still life of the picture.

The doors should be three-paneled, richly moulded, and painted in imitation of two different woods ; and the moulding on the inside might resemble those of the ceiling, in colour at least. The windows will be glazed with plate glass ; and the shutters, which are to fold back against the sides of the recesses, will correspond with the doors.

A difference in the general arrangement of the paneling in the ceiling, less gilding, and a more solid appearance, will be the general characteristics of the library. The architrave and cornices, and also the plinth and base moulding, in this room, will go all round and within the recesses. Two colours might be well used for the walls and pilasters in this room.

A general aerial character should pervade the breakfast-room ; and the form should be of a less massive description than those of the dining-room ; and, as this is a much smaller room, less paneling will suffice for the ceiling : but still, some marked supporting beam or beams should be shown for the purpose of satisfying the mind. A rich moulded cornice should go round this room, and some sculptured ornament would be an appropriate addition.

Principal stairs. The steps and landings will be of stone, with moulded nosings ; the handrail of mahogany, boldly moulded ; and a rich scroll paneling, in the place of the balusters, will be fixed between the newels ; each of which will support a bronze figure. The large window will be glazed with painted glass. A window in this situation presents an opportunity for an historical subject ; in which case, the tone of colour of the staircase walls should be a warm grey, rather dark ; and the ceiling, richly moulded panels, in imitation of wood. Very little variety of colour would be required here, as the principal feature would be the painted glass ; and every other object should be coloured in a subordinate manner, so as to give value to the main feature. The colour of the stone steps I should prefer being rather dark, as the eye would then rest with satisfaction on the principal object ; and, when it had drunk deeply, it would insensibly wander to other objects in search of new beauties. The staircase will be supported upon arches ; and under the landing will be an entrance to the stone balcony leading to the garden, &c. : the doors of this entrance are to have some stained glass.

The back stairs lead from the basement to the roof, as shown in the plans, and will be perfectly fire-proof.

The butler's room will be fitted up with closets, shelves, sink, strong closet, &c., with hot and cold water laid on from the boiler and cistern.

The water-closet and dressing-room will have every convenience of water, fixed basin, and drainage.

As the drawingrooms are intended to be *en suite*, they will be finished alike. The general character of this floor will be different to the one we have just described, as all the windows are arched; therefore, a greater diversity of form will be appropriate. To explain why I say the windows give the general character to the internal appearance of this floor, first, I surmise that the style of architecture now generally adopted (except the Gothic) is founded on the ancient Athenian architecture in all its details; that the want of sufficient authority for the domestic architecture of ancient Greece has driven us to their public edifices for our prototypes: beautiful as these buildings are, their characteristic features, which are columns, cannot be the characteristic features of our domestic edifices. Next to the bare walls which enclose us, and the roof which shelters us from the inclemency of the weather, the door claims our notice for ingress and egress, and the window for the admission of light: these are necessarily the leading forms of our domestic edifices, and, I might say, for the most part, of our public ones also; therefore, all other features in the room should harmonise with them. But the latitude which the knowledge of known architectural forms has given us will allow the introduction of a mixed character, provided the harmony of the design is preserved. In the anteroom of this design, I have used a screen of columns, surmounted by arches; the object being to give a symmetrical form to this room relatively to the large doors: at the same time, this screen gives a recess at the windows, which can be fitted up with couches, and a large mirror at each end, making a still more distinct separation from the other part of the room. The entrances to the drawingrooms are through the lofty arches on each side; and the doors are to slide back into the partitions shown in the plan. One sliding door in each room is to have a small door (of course, to correspond in the framing with the other), so that each room can be used separately when required. Rich damask drapery, in ample folds, hung within these arches, would have a beautiful effect. For the reasons before stated, the arch is the leading feature in this floor: the impost will be enriched, and go all round the rooms; the cornices, base, and plinth mouldings, will also be carried round the room. The ceiling should be supported by beams, resting upon cantilevers at the ends; and the paneling should be in more varied forms than described for the lower rooms. As the drawingrooms are appropriated to more elegant, light, and gay purposes, a cheerful disposition of light and shade, a diversity of colour, and a general tone of airiness, should mark their character; but still, a close adherence to propriety of construction should be indicated, that, when we

are elated with agreeable sensations, there shall be no misgivings upon directing a stricter enquiry: for, whenever the mind has contemplated an object with pleasure, it will invariably seek for further gratification in ascertaining the cause. The paneling of the ceiling is to be in imitation of wood, decorated with flowers and gilding, and a variety of colour in the flowers will be admissible; but great care must be taken that the whole has not a spotty character. Connexion in lines and forms must invariably be preserved when in the same plane: contrasts of form, such as ceilings and walls, the supporters and the supported, will frequently admit of some contrast of colour; but, as we are always more pleased when we see a moulding, a bracket, or a cove uniting the ceiling with the wall, so are we more satisfied when a connexion of colour also exists. A greater contrast may exist between the floor and the wall, so that there is a decided substance upon which the wall rests, or from which it appears to spring; but still, the ceiling must partake of some of the connecting links to make the chain perfect.

In rooms strictly architectural, the ordinary method of papering, according to fashion, should never be attended to. Fashion is capricious: architecture is fixed on reason, and its principles never change; so that, although the colours of rooms may be varied in many ways, still the same leading principles should govern their application. Imitations of different kinds of marbles may aptly be applied to these rooms. Some elegant sculpture, in compartments of wreaths, and other sculptural ornaments, principally in imitation of white or statuary marble, would be appropriate. Large plates of looking-glass, in judicious situations, would have a splendid effect; but so various are our tastes, that, if too much be done, confusion is the result; and if too little, meagreness. The doors, being of the same material as the ceiling, will partake of the same colours; and the handles to the locks will be of ivory or cut glass. The chimney-pieces will be of statuary marble; the base moulding and plinth of the room breaking round so as to form a pedestal, upon which will be raised sculptured supporters, unconnected with the wall, bearing shelves, richly carved on the edges. All the windows will be glazed with plate glass, and will open to the balconies.

I have before mentioned that the decorative painting, sculpture, and other parts, must not be considered at present as finally determined on; as also some of the minor details, which can only be fully described upon making out the working drawings.

25. *Henrietta Street, Brunswick Square,*
Nov. 28. 1837.

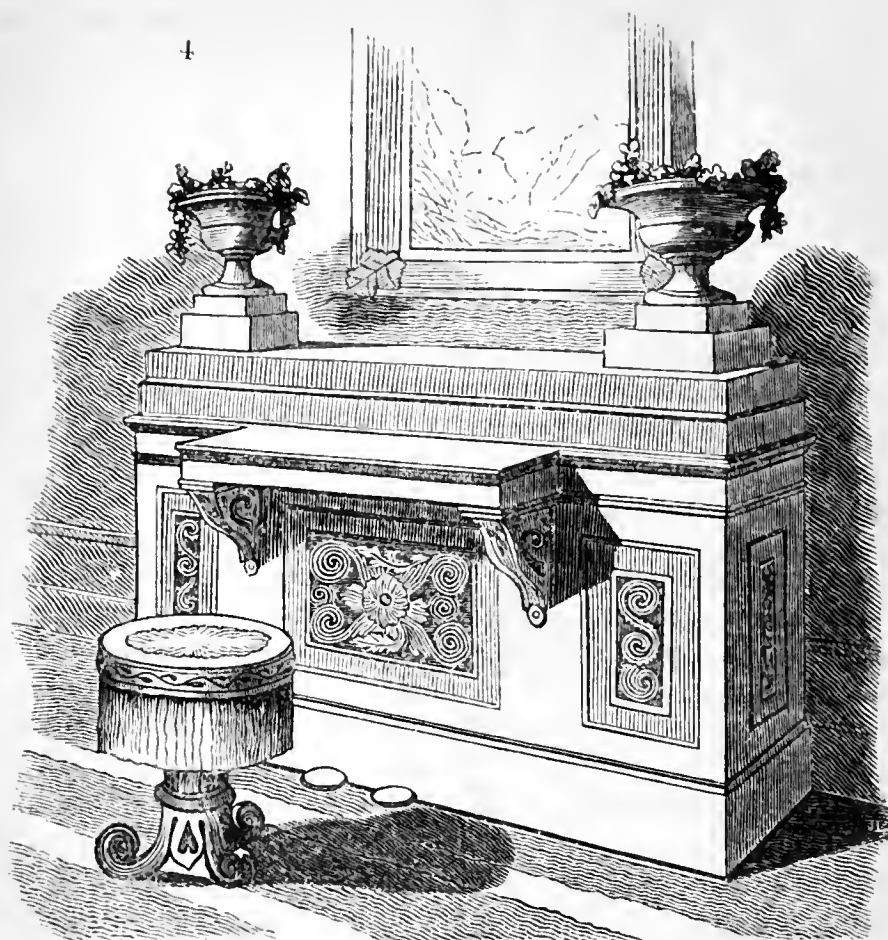
ART. V. *On Furniture.* By E. B. LAMB, F.I.B.A.

AMONG the subjects which come under the direction of the architect, furniture is not the least important; and, although by many of the profession attention to it is considered derogatory to the art, its usefulness, and the comforts which we should scarcely obtain but through its influence, afford fully sufficient reasons for bestowing some thought upon it. Usefulness and comfort are first to be obtained; and, when these are fully established, beauty of proportion, and unity with surrounding objects, should follow, so that furniture should blend and harmonise with the architecture of the room in which it is placed; without which, the most costly decoration in the one, and the most perfect character in the other, will fail to satisfy the mind.

To the want of some knowledge of the styles and details of architecture by upholsterers, may be attributed the many absurdities which we frequently discover in ornamental furniture. Although the severe character of architecture would but ill suit furniture, if columns and their accompaniments only were applied for that purpose, the union between the one and the other may be preserved by the propriety and fitness of the minor details.

In recently sketching various designs for furniture, among the number the grand piano-forte presented the greatest difficulties to surmount: the form prescribed by its uses, the great space required for it in a room, and the very unarchitectural character it assumed, set me to consider whether some alterations could not be made, so as to embrace all the utility of the present instrument with more beauty; and for this end the sketch *fig. 4.* was produced, which I send merely as a hint to manufacturers; at the same time stating my objections to the instruments now in use: it will be for others to object to mine.

The horizontal grand piano-forte, which is the most perfect instrument now in use, is of such an awkward shape, that it is almost impossible to give any expression of style to it; and, in a moderate-sized house, it occupies so large a portion of the room in which it is placed, that now the upright grand piano-forte is generally substituted for it. This is a more recent invention, and certainly is more compact in form; and, although much might have been done in the way of characteristic decoration, it is seldom distinguished by any marks of judgment or good taste. The upholsterer (if he makes the design) gives it columns so shrunk in the shafts, that they may frequently be seen twenty or thirty diameters high: the capitals and bases are equally inconsistent; and the cornice is a crowning absurdity of massive ovolo and turned beads. But, if no attempts at strict architecture



had been made, the form would, perhaps, by its simplicity, have been more in character with the architecture of the room. To produce architectural fitness of expression, it is not necessary to employ columns; and, where they are introduced so small, and in such situations, they rather create a disgust, than the pleasurable sensations they inspire when viewed as the necessary adjuncts of a portico.

The objection to an upright grand piano-forte is, in my opinion, great; for, when the player is also “obliging us with a song,” at least half the delight we should feel from those “dulcet sounds” is lost in the silk which faces the singer. As this is known and acknowledged to be a defect by all makers, I am surprised that no remedy for the evil has been attempted by keeping the whole body of the instrument below the head of the performer, which a very little contrivance might effect.

Cabinet, cottage, and other small piano-fortes, are sufficiently below the voice generally for all the purposes of a singer; but they do not possess the power and variety of the grand piano. In the sketch *fig. 4*. I have endeavoured to obviate all the difficulties above mentioned: that it can be constructed, I have no doubt, and that, too, with very little alteration in the present

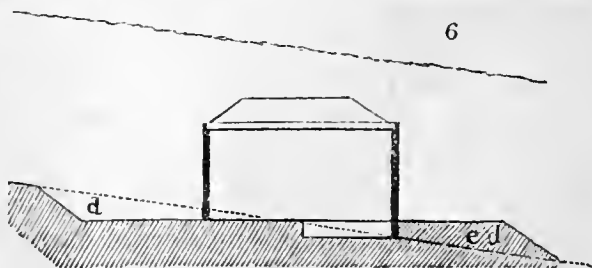
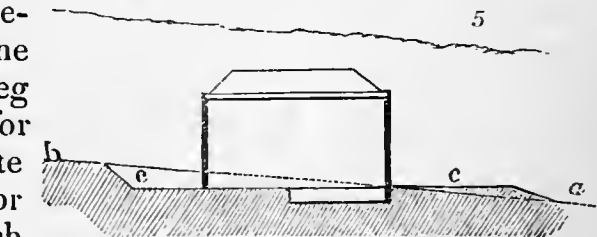
mechanism; this alteration being principally in the keys and hammers. But I may just mention one obstacle, which is independent of the instrument; viz. the great difficulty of getting makers out of the beaten track.

This design resembles a grand, or rather a large square, piano-forte, turned on its edge, and the keys projecting at right angles from it: the whole body of the instrument is thus kept below the performer, which renders it equal to the horizontal grand piano; while it occupies much less space than the latter instrument, and it is superior as an article of furniture. As all the sides could be finished alike, it can be placed in almost any situation, so that the performer can face the company, and thus the full effect of the voice be heard; and, if surmounted with vases of glass or alabaster, bronze figures, candelabra, or other ornaments, it would form an agreeable acquisition to the drawingroom. It may be constructed in the most simple manner, or it can be richly decorated.

25. *Henrietta Street, Brunswick Square, Sept., 1837.*

ART. VI. *On selecting the Position of a House on the Side of a Hill.* By N.

THE selection of the exact position for a house which is to be built on the side of a hill, particularly if the slope is considerable, requires caution. The common faults of a house so placed are, that it has the appearance of being built in a hole dug out for it, and that it is very damp from an insufficiency of earth having been removed from around it. The method of driving a peg into the spot, selected for the exact level and site of the drawingroom, or entrance door, from which the foundations are to be measured, is sure to involve the owner in these difficulties; and is contrasted in *fig. 5.* with a method, shown at *fig. 6.*, in which attention has been paid to the formation of a level space sufficient to hold the house, by the adoption of the well-known canal and railroad rule; viz. that of arranging that the filling up shall be exactly equal to the cutting out. In *fig. 5.*, the dotted line *a b* shows the surface



of the hill ; and *c*, the level space made for the house ; the earth to be removed being in this case carted away to a distance. *Fig. 6.* also shows a dotted line for the original surface of the hill ; but, in this case, the earth removed from *d*, instead of being carted away, is placed on *e*, so as to increase the size of the platform on which the house stands. It is obvious, also, that the whole should be done previously to the commencement of the building, so that the earth shall be wheeled across instead of round the house ; the expense being very nearly the distance multiplied by the quantity. Few persons are capable of judging by the eye the space required for a house : for instance, for a building of 60 ft. square, as represented in *figs. 5. and 6.* ; or the number of feet to be sunk to obtain a level space. The deception of cutting a level into a hill is singular : I have known a mason's level discredited, though twined ; and water sent for to ascertain whether the ground had not been too much lowered towards the hill. In Ireland, lately, a mine agent was requested to supply water to the top of a hill, in consequence of a similar mistake ; and it was suggested that it would be quite as easy to take water to the top by winding it round the hill, as across the opposite mountain to the mine.

The change in appearance which takes place on the removal of ground will sometimes alter the owner's idea of the exact position and level of the rooms ; and minor alterations may then be effected at a small expense.

Situations of great exposure, where trees will scarcely grow, undoubtedly occur ; and when they do, shelter, if of paramount importance, may be obtained from the hill itself ; but, in all situations where trees will thrive, the house becomes eventually far too deeply buried, unless brought forward from the hill in the method shown in *fig. 6.* The adoption of a terrace for the purpose of connecting the house with the grounds or garden, though the simplest plan, may be avoided by regular banking, if thought advisable.

My object, however, is not to point out the different methods by which this principle can be carried into effect, but to remind persons about to commence building of the economy of previous arrangements in the removal of earth to form a proper site for a house ; and that, though space may be eventually obtained round it at treble cost, yet that an error in the level as regards the hill surface, and the surrounding trees, can never be amended.

Local circumstances, such as the site proposed being hollow or convex, exposure, the owner's preference of a bold or snug appearance, will afford exercise for judgment, in each particular case, to harmonise at a moderate expense the connexion between the house and the hill on which it may be placed.

Penryn, January, 1837.

ART. VII. *Official Report made to Charles Boyd, Esq., Collector of Her Majesty's Customs, for the Information of the Honourable Board of Commissioners, upon Bernhardt's Stove-Furnaces.* By ANDREW URE, M.D. F.R.S., &c. Communicated by the Author.

MY DEAR SIR,

Soon after receipt of your note, enclosing M. Bernhardt's letter to the Hon. the Commissioners of Customs, relative to warming and ventilating your Long Room, I paid a visit to Lord King's house, in St. James's Square, agreeably to M. Bernhardt's invitation to inspect his plan, as erected in it. I was accompanied by an intelligent scientific friend. What was my astonishment to find no less than four large elaborate furnaces built up in that moderate-sized mansion; all of them in full activity, and consuming four times as much fuel as would, with judicious economy, have been sufficient to heat a house of four times the size. The cost to Lord King of the said furnaces, and slate-flue constructions, of M. Bernhardt cannot, I understand, be less than 1000*l.*; a sum at least four times as much as would have been adequate to the purpose in the hands of an intelligent English engineer, acquainted with the modes of heating adopted in the cotton factories.

Having caused an exact drawing to be made of one of M. Bernhardt's furnaces, I now forward it to you, and request you will give it a most deliberate consideration. You will perceive a fireplace (*fig. 7. a*) similar to one of those under the cockle in the cellars of the Custom House. The flame from the grate passes directly into the first flue, above *c*; which, like the other flues, is a sheet-iron pipe, 8 in. or 9 in. in diameter, and 18 ft. in length. In this single stove there are at least fourteen (I rather think 16) pipes of that size, laid zig-zag, with a slight slope to the horizon, arranged over each other in twin rows (*figs. 8, 9.*), through which the burned air and smoke circulate backwards and forwards before they are discharged into the chimney at *f*. It is obvious that the lower pairs of pipes must partake of the ignition in the fireplace. Accordingly, upon the first two occasions, when I visited the said mansion, I found the lower pipes excessively hot; and suggested to Mr. Cubitt's clerk of the works to try their temperature, by introducing into them pieces of common solder. He did so; and he afterwards produced specimens to me, which proved that the solder was not only melted, but oxidized, by the pipes. The air of the space *d d*, in which the above twin rows of pipes are enclosed, must, therefore, be rendered unpleasant and insalubrious, by coming in contact with the lower part of the range, in a degree far worse than it is by sweeping over the pyramids of your existing stoves at the Custom House. Did you adopt M. Bernhardt's furnace, you might justly inscribe over it, *Incidit in Scyllam cupiens vitare Charybdin*: in plain

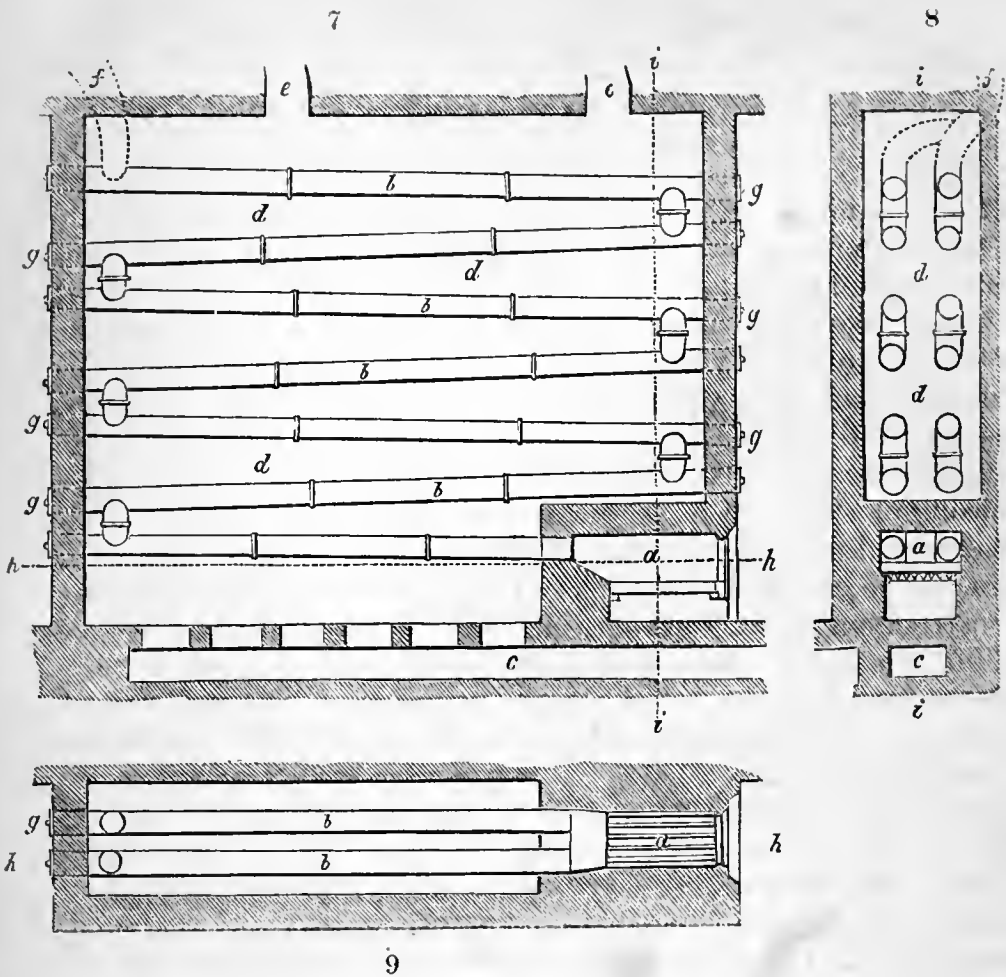


Fig. 9. is a ground plan, showing the furnace and the two lowest sheet-iron pipes.

Fig. 7. is a longitudinal section on the line *h h*.

Fig. 8. is a cross section on the line *i i*.

a, Furnace. *b*, Sheet-iron pipes. *c*, Cold air flue. *d*, Space for hot air surrounding the pipes.
e, Flues to convey warm air to various apartments. *f*, Smoke flue.
g, Small doors to clean out the pipes.

English, you would get out of the frying-pan into the fire. There is, moreover, not the slightest novelty in M. Bernhardt's arrangement; zig-zag pipes, laid at various slopes, having been commonly used in England, France, Germany, &c., for upwards of a century past; and, indeed, the very scheme of enclosing them in a hot-air chamber is represented in books upon stove-heating, in my possession.

With regard to the practical influence upon the feelings and the health, of M. Bernhardt's stoves, as mounted for Lord King, I cannot speak in favourable terms. The gentleman who accompanied me at the first visit, though in vigorous health, was not long in the house before he felt extremely uncomfortable; and, at the end of less than an hour, he was obliged to leave it, in consequence of a violent headach, of which he did not get rid till he had breathed the external air for some time. My own sensa-

tions were exactly similar to those I experienced when standing near the outlet-valve of hot air in your Examiner's rooms: and, indeed, the cause was quite analogous; for the air issuing from M. Bernhardt's flue orifices indicated by my trials a temperature of 150° Fahr.: and it must have been at times higher; for the clerk of the works told me it frequently broke his thermometers, which had a range up to that pitch.

M. Bernhardt has since sought to account for these *torrefying* results by saying that the fires in his stoves were then forced, in order to dry the plaster-work of the house. I grant that this may be so far true; for, undoubtedly, Lord King's family could not have endured that offensive burnt air for even half a day. Still, it is evident from these experimental facts, as well as from the construction of the furnace itself, that the least over-firing, from negligence of the servants, must communicate ignition to the sheet-iron pipe immediately connected with it; and that this pipe, so overheated, will taint all the air which passes over it. Upon Sylvester's cockle plan, as erected at the Custom House, the temperature of the hollow iron pyramid, against which the cold air impinges, is much more susceptible of regulation than the lower pipes of M. Bernhardt's scheme. Indeed, I consider Sylvester's plan, as originally constructed by William Strutt, Esq., of Derby, to be the least objectionable of all known arid-air furnaces.

In his magnificent factories at Belper, Mr. Strutt sought to invert the natural order of ventilation, making the influx of fresh warm air to be near the ceiling of the rooms, and the efflux of used air near the bottom. This arrangement, which is nearly fifty years old in this country, has been just imported as a novelty by M. Bernhardt. He has, in like manner, imported the ancient plan of a subterranean conduit for supplying cold air to the bottom of stoves, which has been familiarly known to every man of science for a century at least; which was the foundation of Mr. Strutt's plan of ventilation, and is figured in the first plate of Gren's *Elements of Chemistry*, published at London in 1800.

With regard to the downward circulation of air, every sound physiologist will deprecate it as a noxious fallacy. The mephitic exhalations from our lungs, having a temperature of 98° , rise and occupy the upper part of the room; and, if forced downwards by any means, must inevitably be breathed again and again by its inmates before their particles can be discharged at the level of their legs or feet, in violation of the laws of specific gravity. Where parsimony of fuel is the sole object and boast of an empiric, this retrograde circulation may be rendered specious, and is certainly better than the aerial stagnation in German or Russian apartments; but, where health and comfort are primary considerations, we should so regulate the circulation as that none of the air vitiated by our lungs should ever enter them

again. This point can be secured only by leaving the rarefied exhalations to follow their natural upward direction; recollecting, moreover, that moist air is lighter than dry air of the same temperature.

It may be admitted, as a general principle, that the comfort of sedentary individuals, occupying large apartments during the winter months, cannot be adequately secured by the mere influx of hot air from separate stove-rooms: it requires the general influence of radiating surfaces in the apartments themselves, such as of open fires, of pipes or other vessels filled with hot water or steam. The clothing of our bodies, exposed to such radiation in a pure, fresh, somewhat cool and bracing air, absorbs a much more agreeable warmth than it could acquire by being merely immersed in an atmosphere heated even to 62° Fabr., like that of the Long Room. In the former predicament, the lungs are supplied with a relatively dense air, say at 52° Fabr.; while the external surface of the body or the clothing is maintained at, perhaps, 70° or 75° . This distinctive circumstance has not, I believe, been hitherto duly considered by the stove doctors, each intent on puffing his own pecuniary interest; but it is obviously one of great importance, and which the English people would do well to keep in view; because it is owing to our domestic apartments being heated by open fires, and our factories by steam pipes, that the health of our population, and the expectation of life among all orders in this country, is so much better than in France and Germany, where hot-air stoves, neither agreeable nor inoffensive, and in endless variety of form, are generally employed.

Reverting more particularly to M. Bernhardt's furnaces at Lord King's, we find in one of them 16 pipes, 9 in. in diameter, or 28 in. in circumference, and 18 ft. long; presenting, therefore, the enormous surface of 472 square feet. We must bear in mind that these are the dimensions of only one of the four stove furnaces in his Lordship's house. Taking all together, there is enough of iron surface, were it judiciously employed, to warm the vast area of St. Paul's or Westminster Abbey.

When I last visited these constructions of the architect from Saxony, as M. Bernhardt styles himself in his letter to the Hon. Commissioners, his noble employer, who was then in occupation with his family, very politely showed me the whole arrangement of the stoves, but told me he meant to employ them chiefly in seasoning the house during his absence in the country; and I found, in fact, that none of the stoves were heated upon that occasion.

The smoke, in circulating through the zig-zag pipes, deposits nearly the whole of its soot; so that, when coal is burnt in the fireplaces, the manufacture of soot in the apparatus must be

prodigious, and the necessity of removing it of frequent recurrence. To have such a vast magazine of soot in the heart of a noble mansion can be neither comfortable nor safe. As the sheet-iron pipes readily crack and corrode, the stench of the soot will be apt to transpire; or it may get inflamed, in which case it might set the house on fire. One of the smoke mains (pipes) crosses the ceiling of the passage in the under-ground story in a very awkward manner, passing into a soot-chamber closed with a hinged iron door of portentous aspect.

In conclusion, I take leave to state to you my firm conviction that the only method of warming your Long Room and subsidiary apartments, combining salubrity, safety, and economy, with convenience in erection and durable comfort in use, is by a series of steam pipes laid along the floor, at the line of the desk partitions, in suitable lengths, with small arched junction-pipes rising over the several doorways, to keep the passage clear, and at the same time to allow a free expansion and contraction in the pipes, thereby providing for the permanent soundness of the joints.

Should the Hon. Board think fit to entrust me with superintending the erection of a system of heating the Long Room, &c., I engage to place it in the hands of a skilful practical engineer, who will do it in the best manner, and upon the most reasonable terms: I shall, moreover, hold myself responsible for its answering all the desirable purposes above indicated.

I do not think that any moderate number of open fire-grates will be adequate to heat the Long Room during the winter months, when the air from the adjoining banks of the Thames is so extremely chilly, damp, and unwholesome. This mode, moreover, would be extremely wasteful of fuel.

From his second letter to the Hon. Board, which you have just forwarded to me, it would appear that M. Bernhardt has been permitted to operate upon the committee-rooms of the House of Commons. Having had an opportunity, during a long interview which he lately bestowed upon me, of assuring myself that he is very slenderly acquainted with either the physical or chemical principles of heating and ventilating apartments, I have not deemed it worth while to inspect his recent operations. If stupor, headach, and disease have been occasioned by the air-ovens in the Custom House, they cannot fail to be produced in an aggravated form by the torrefying pipe-range of M. Bernhardt. Should the members of our legislature suffer their health and comfort to be compromised by such astute empiricism, we may expect to see as rapid a round of elections as any partisan of annual parliaments could desire; for certainly, if subterraneous furnaces, like those at Lord King's mansion, be set in action under the Houses of Parliament, a blow may be inflicted upon

the heads of the nation, which shall throw the machinations of Guy Fawkes into the shade.

To those unversed in the mysteries of jobbing, the employment of M. Bernhardt upon the committee-rooms, to the exclusion of many more capable native engineers, must excite surprise. But, alas! daily experience shows how easily any imposture may gull the English public for a season, however false the purpose or foolish the scheme, provided a joint-stock machine can be got up, which, like a monster polypus, projects its *tentacula*, *feelers*, and *suckers* upon every object with reckless avidity. Such an association seldom scruples to use bribes, flattery, or threats to compass its mercenary ends. Thus, the prime functionary of this German stove society had the hardihood to tell me, in my own house, that, if I made an unfavourable report concerning it to the Board of Customs, he would employ Mr. Faraday to refute me, and write a certificate in its favour. In the same modest strain, he asserted, that Bernhardt's plan of ventilation was founded upon principles which no philosopher in this country did (or could) understand. As one of the humblest but not least zealous disciples of science, I acknowledge myself incapable of discovering either the novelty or worth of the scheme.

I am, my dear Sir, yours most faithfully,

ANDREW URE.

13. Charlotte Street, Bedford Square, Nov. 23. 1837.

The old and-well known plan of heating buildings by means of several ranges of nearly horizontal pipes, placed in a brick oven, and subjected upon one of their surfaces to the aerial products of combustion, and upon the other to atmospheric air, is fully described, with illustrative engravings, in the *Dictionnaire Technologique*, under the article "Chaleur," published in the year 1823.

"The *calorifères* of great establishments," says M. Payen, the author of the article, "consisting, usually, of cylindrical cast-iron pipes, built up in a brick furnace, are placed in a cellar (*cave*) under the premises. This distribution is convenient, as we do not embarrass the upper floor; but we suffer a loss of the heat communicated to the massive walls round the furnace. In order to diminish this loss as much as possible, we ought to erect the *calorifère* in some underground suite of apartments, which require warming, leaving only the mouth of the furnace on the outside of the house, for the convenience of firing.

"Plate xii. (*fig. 7.*), *Arts Chimiques*, represents one of these *calorifères* cut by a plane perpendicular to all the axes of the cylinders. We see that the products of combustion developed in the fireplace pass under the first range of cylinders, rise between the first and second range, then between the second and

third, next between the third and fourth, and so on till they escape above the uppermost range, under the brick arch, to reach the chimney. This vertical chimney, composed of copper pipes, gives off heat to all the apartments which it traverses in its way to the roof of the building.

“*Fig. 8.* is the same *calorifère*, cut by a plane in the axis of the four ranges of pipes, and shows the direction of the currents of hot air in the interior of these cylinders. The atmospheric air enters by the lowest orifice: it is conducted by recesses left in the brickwork from one row of pipes to another; it thus circulates in the zig-zag directions indicated by the arrows, till it enters the copper pipes which conduct the warm air to the upper floors. The air rises, obviously, by virtue of its relative lightness, and thus occasions a current which continues as long as there is heat in the fire.

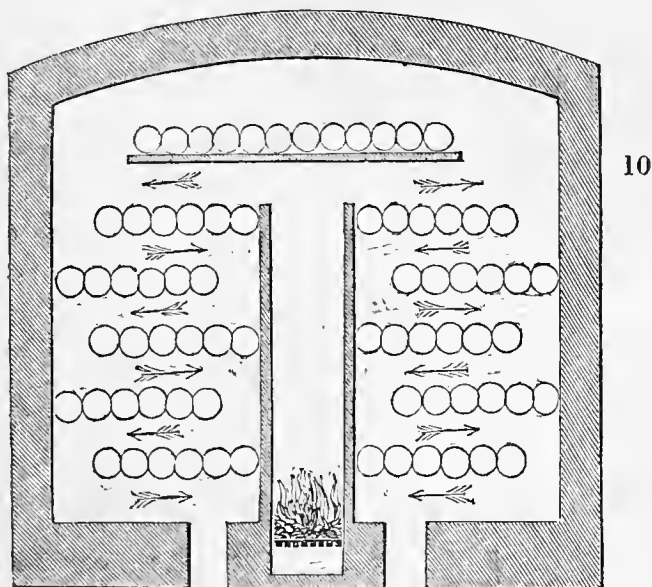
“The *calorifère* just described affords a great supply of heat, if the fire be active and the current of air rapid; but, to deprive the products of combustion more completely of the heat, which they are apt to carry off in waste, we may render the warming of the air more methodical, by introducing the external atmosphere round the warm pipes at the top, near to their entrance into the chimney, and lead it successively downwards over all the horizontal pipes, in the inverse direction of the current of burned air; just as, in the double still-worms, we make the cooling water circulate upwards, while the condensing vapours circulate downwards. By this method, the atmospherical air, during its whole progress, strips the pipes of their heat with the utmost possible energy; since it becomes progressively hotter, and is always cooler, at every point of its course, than the surfaces of the pipes with which it comes in contact; and since the transmission of the heat through the metal is proportional to the difference of the temperature of the inside and outside. If, on the contrary, the internal and external currents proceeded in the same direction, the temperature would differ but slightly in many places; or, it might be even hotter outside than inside; and, consequently, the transmission of the heat would be nearly null in those places, or it might be, at times, even opposite to what we wish to obtain.”

Mr. Payen then proceeds to describe the construction of a stove free from the vices which he has just pointed out, one which appears capable of employing, as usefully as possible, the heat disengaged by the fuel. Into the details of this stove I shall not enter, as its sole object is economy, without reference to the temperature of the pipes by which the atmospheric air is to be heated. From the experience of the gentlemen in the Long Room of the Custom House, and in many counting-houses in the city, where arid stoves have lately been erected, it appears certain that air exposed to metallic surfaces, heated beyond a certain pitch, ac-

quires most insalubrious properties, and becomes capable of inducing an apoplectic condition of the brain in persons plunged into and breathing it.

In my former paper, published in this Magazine for April last, (Vol. IV. p. 162.), I have endeavoured to explain the rationale of the injurious action of such air upon the living system. Every pathologist will tell us that changes in the condition of the atmosphere, altogether inappreciable by chemical and physical tests, are frequent causes of the most formidable and fatal maladies: witness the malaria of the Campagna of Rome, of many places in the West Indies peculiarly subject to yellow fever, of cholera, influenza, typhus fever, and scarlet fever, &c. Not only such alarming epidemics, the *nova cohors februm*, but many obscure chronic derangements of health, are produced by apparently slight changes in the constitution of the air of our apartments. Three years ago, I erected, in a spacious bedroom of my own house, a stove, which was never heated so high as the boiling point of water, but which allowed no circulation of air by the chimney, except the small quantity which was admitted very near the hearth-stone, for supporting a slow combustion in the fuel. Every thing seemed comfortably and philosophically arranged. The temperature of my room was nearly the same night and day; being, upon an average, from 55° to 60° Fahr. In a short time, however, my natural vigour of body and mind began to give way; my sleep became disturbed; my appetite declined; a furious cough, with pains in the chest, supervened, without having been preceded, however, by any of the usual symptoms of catarrh; and my bowels were obstinately constipated. For this general distemperature, which continued for several months, my kind medical friends prescribed a vast variety of remedies; such as blood-letting, blistering, cupping, expectorants, antispasmodics, emetics, diaphoretics, mercurial alteratives, &c.; a pharmaceutical ordeal which I underwent without any material benefit. At length, I discovered that the main cause of these disordered functions was a peculiar state of the blood, caused by breathing an atmosphere not sufficiently renewed, in consequence of a nearly airtight stove apparatus. I now caused the stove to be removed, fire to be rekindled in the open grate; took a strong dose of purgative medicine, to restore the hepatic secretions; and, within three days of this change of plan, I felt myself a new being; the powers of my body and mind resumed their wonted alacrity; in which state, thank God, they have ever since remained, owing, chiefly, I have no doubt, to unembarrassed ventilation in every part of my house, and the suppression of stove-malaria. To render such arid stoves as little as possible insalubrious, we should remove to the greatest distance from the fire the row of pipes upon which the aerial products of combustion first impinge; protecting them, also, from

the direct contact of the burned air by a bed of fire-tiles, upon the same principle as the gas retorts are now generally mounted. We should also imitate the modern mode of arranging the fire-flues in the gas-works, so as to make the burned air first act upon the top range of retorts in each furnace; thence circulate obliquely downwards, and be discharged into the chimney, below the level of the bottom of the lowest range. By this method, an economy of from two thirds to three fourths of the fuel has been obtained over the former plan of letting the products of combustion escape at the top of the furnace, above the uppermost retort. *Fig. 10.*

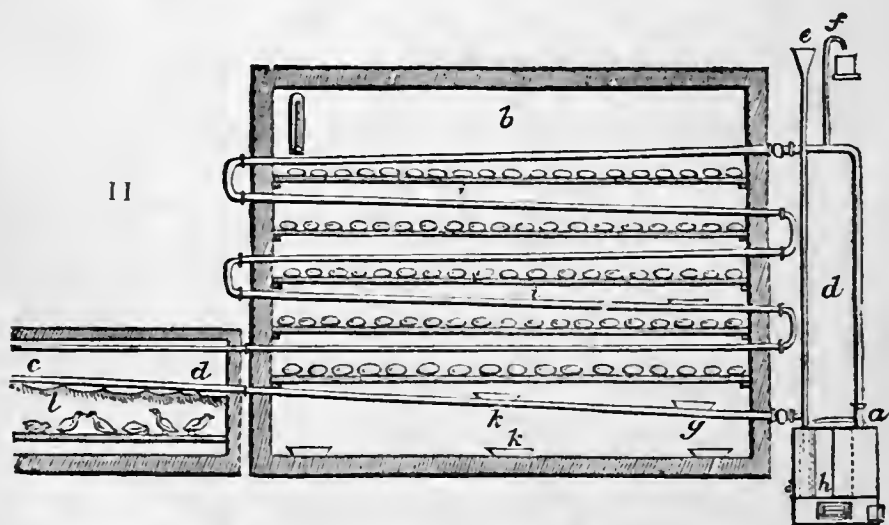


is a cross section of such a stove. I shall furnish a detailed description of it, for the next Number of your Journal.

In the Number of this Magazine for September, 1835 (Vol. II. p. 407.), there is a well-written paper, by Censor, upon the comparative advantages and disadvantages of the various modifications of the hot-water system of warming apartments. With his judicious statements and reasonings my views entirely coincide. It is a remarkable fact, that the inventor of that system, M. Bonnemain, whose acquaintance I had the pleasure of making, upwards of twenty years ago, in Paris, had erected it near that capital prior to the French revolution, and in, probably, a more complete form than it has been ever since, either in his own country or in this. His water-stove is described, under the article "Chaleur," in the *Dictionnaire Technologique*, published in 1823, quoted from above; and is not only economical in fuel in the highest degree, but is provided with an ingenious mechanism of expanding bars, on the principle of Harrison's gridiron pendulum, for regulating the admission of air under the grate, and thereby the vivacity of the combustion. The best test of the excellence of his arrangements was, the success

of his *poussinières*, or nurseries, warmed by hot-water circulation, for hatching eggs and rearing chickens, in such numbers as to supply, in a considerable measure, the Parisian market. This ingenious and profitable establishment, in which he had embarked his little fortune, fell a sacrifice to those disastrous times. When I knew him, he was occupied in giving private instructions relative to the construction of hot-water stoves, and *artificial incubation*. He was then a stout hale man, about seventy-two years of age, of the most amiable complacency of manners, and well acquainted with all the interesting inventions of the day. Many an instructing promenade I had with him. He was ever ready to conduct the curious stranger to see whatever was most novel in science and art, terminating his round of visits at the Jardin des Plantes, in the vicinity of which he had his humble abode. Every body esteemed him, and sympathised with his misfortunes. At a subsequent period, a petition was presented to the French government, signed by many distinguished savans, soliciting a small pension for the venerable *octogenaire*; but with what success I have not heard.

The article "Incubation artificielle," in the *Dictionnaire Technologique*, was drawn up under his directions, and is not only valuable from its details, but as a document in the history of *calorific* invention.



The water-boiler is shown at *h*, with the expansion rod, which regulates the air-door of the ash-pit: *a* is a stopcock for modifying the opening by which the hotter particles of water ascend; *d* is the water-pipe of communication, having the heating-pipe of distribution (*b*) attached to it; which thence passes backwards and forwards at *i* and *k*, with a very slight slope from the horizontal direction, through the *poussinière*. It traverses this apartment, and returns by *g* to the orifice of the boiler, where it turns vertically downwards, and descends to nearly the bottom

of the boiler at *h*, discharging at that point the cooler, and therefore denser, particles of water; which displace, by gravity, those which, at *a*, are continually pressed upwards: *c h* is a tube surmounted with a funnel, for keeping the range of pipes always full of water; and *f* is a siphon orifice for the escape of the disengaged air, which would otherwise be apt to occupy the tubes partially, and thus obstruct the locomotion of the aqueous particles.

The faster the water gets cooled in the serpentine tubes, the quicker its circulation will be; because the difference of density between the water in the ascending and descending legs of the system (viewed as two vertical columns) which is the sole cause of its movement, will be greater. *k g* represent small saucers filled with water, which supply the requisite moisture to the heated air, so as to place the eggs (arranged in a series of trays) in a humid atmosphere, similar to that under the body of the hen.

When we wish to hatch eggs with this apparatus, the fire is to be kindled in the boiler; and, as soon as the temperature has risen to about 100° Fahr., the eggs are introduced, but only one twentieth of the total number intended, upon the first day; next day, a like number is laid upon the trays, and thus in succession for twenty days; so that upon the twenty-first day the greater part of the eggs first placed may be hatched, and that we may obtain daily afterwards an equal number of chicks. Regularity of care is thus established in rearing these tender animals.

During the first days of incubation, natural as well as artificial, a small portion of the water contained in the eggs evaporates through the shell, and is replaced by a like quantity of air, which is afterwards useful for the respiration of the animal. If the warm atmosphere surrounding the eggs were very dry, such a portion of their aqueous matter would exhale through the pores of the shells as would endanger the future life of the chick *in ovo*. The transpiration from the body of the hen, as she broods over the eggs, generally counteracts this desiccation; but, notwithstanding, in very dry weather, many hatching eggs fail from that cause, unless they be placed in moist decomposing straw. The water-saucers (*k g*) are therefore essential to success in artificial incubation.

Any one who considers the preceding description will be satisfied that M. Bonnemain, upwards of fifty years ago, had erected the hot-water system of warming apartments, in the most philosophical, judicious, and economical manner. The Marquis de Chabannes seems to have done nothing but pirate his plans, and disfigure them so as to make them pass for his own.

Whatever mode of heating be adopted, with a view to economy, in lofty public buildings, where there is abundance of air,

we should never suffer our domestic apartments to be warmed by a stove, to the suppression of our open fires; which, when well constructed upon the Rumford plan of radiation, give the most comfortable quality of warmth, with complete change of atmosphere.

Page 182.

REVIEWS.

ART. I. *Prolusiones Architectonicæ; or, Essays on Subjects connected with Grecian and Roman Architecture.* By William Wilkins, A.M., R.A., F.R.S., formerly a senior Fellow of Caius College, in the University of Cambridge; Regius Professor of Architecture in the Royal Academy. Part I. 4to, 14 plates.

THE first essay in this learned work is on the Erectheum, an edifice of Athens of the highest antiquity, which derived its appellation from the sixth king Erechtheus, who died B. C. 1347.

“This temple was constructed on a site hallowed by all the mythological associations which connected this favoured city with its divine protectress. On this spot, according to tradition, the truth of which it would have been impiety to question, the preternatural demonstrations of power exhibited by Minerva and Neptune, in their contest for the tutelary guardianship of Attica, were indelibly implanted, and hence became objects of the greatest devotion. The spring of salt water which issued from the earth when struck by the trident of Neptune, and the sacred olive which took root in the rocky soil by the rival act of the goddess, were enshrined in a building constructed over them for their shelter and protection.”

Herodotus states that, “on the occupation of the citadel by the Persians, this temple, together with the other sacred edifices of the Acropolis, was burned; meaning, probably, that the roof and all the combustible portions of the building were then destroyed, although the walls must have been left standing. On the following day, some Athenian refugees who accompanied the invader, were permitted to perform their religious rites in the half-consumed temple; and on this occasion it was discovered that the sacred olive not only had escaped destruction, but that it had sent forth new and vigorous shoots.” This induced the Athenians, when left at liberty by the absence of the invaders, to commence rebuilding the temple, which was reerected by the architect Philocles; and, in the 92d Olympiad, it wanted little more than the roof to be complete. Strabo, about 400 years after the Persian invasion, mentions this temple; and it has been supposed (though it is by no means certain) that Xenophon alludes to it in describing the destruction by fire of a very ancient temple of Minerva. Pausanias also mentions the destruction by fire of the temple of Minerva-Alea, about this time. Mr. Wilkins, however, con-

cludes that the temple mentioned by these two authors was that of Minerva at Tegea, and not the Erectheum.

The plates of this edifice are, 1. Plan of the Erectheum; 2. Elevation of the Portico of the Temple of Minerva-Pallas; 3. Elevation of the Portico of the Pandroseum; 4. The Orders of the Columns; 5. Details of the Roof of the Erectheum; 6. Details of the Roof and Pediments; 7. Plan and Appropriation of the Erectheum, with a plan of one of the Angles of the Roof, and a Section through the Entablature of the Parthenon; 8. The Western Front of the Pandroseum; 9. The South Front of the Erectheum; 10. Elevation of the North Side of the Temple. 11. Transverse Section through the Pronaos of the Pandroseum. 12. Elevation of the North Wall of the Stoa of the Pandroseum; 13. Details of the Thyroma; 14. The Mouldings of the Hyperthyrum enlarged.

The author next treats of the Athenian inscription, of which he observes, that "this remarkable document, relating to one of the most celebrated temples on the Acropolis at Athens, possesses no ordinary degree of interest, from the circumstance of its being not only singular in its kind, but from its connexion with a building of which there are several portions still in existence. It abounds in architectural terms, some of which are obsolete; and others whose application to the different parts of the building can only be understood by those who possess an accurate and practical knowledge of the construction of Grecian temples, and particularly of the roofs and superstructures; a knowledge which has only reached us through the means of recent architectural publications."

The Construction of the Roofs of Temples forms the next essay. It was first printed in the *Unedited Antiquities of Attica*, edited for the Society of Dilettanti, and is now republished in a cheaper form. "Among the omissions of Vitruvius, he has neglected to inform us of the mode followed by Greek architects in roofing their temples. He mentions two kinds of framed timbers in common use, as the span of the roof was of greater or less extent; but of the construction of the simæ, or gutters, and the covering of the roof itself, he is altogether silent."

The last essay is one endeavouring to prove that the Temple at Jerusalem is the type of Grecian architecture. "The arrangement and the dimensions of the Jewish Temple," Mr. Wilkins observes, "are given so much at length in the Sacred Writings, that we are enabled to ascertain its size and ichnography with a great degree of precision; and I shall now proceed to show that a very extraordinary coincidence, both in proportion and in actual dimensions, existed between this and the temple at Pæstum, that could only have originated in the intention of the projectors of the latter to adopt the other as their model, and

to adhere to it with as much precision as was consistent with the observance of different forms of worship in the two nations. We shall find, therefore, that the variation chiefly consists in those parts essential to the one, and unnecessary in the other; or, to speak with greater precision, between the sanctuary of the Jewish temple and the posticum of the Grecian."

ART. II. *Mechanics for Practical Men.* By Alexander Jamieson, LL.D., Author of a "Dictionary of Mechanical Science," and a "Treatise on the Elements of Algebra."

WE are most anxious to recommend this work to the study of the young architect, as by far the most important subject with which he can be occupied. There are minds capable of attaining a considerable degree of eminence in architecture as a fine art, without being at all competent to demonstrate either the strength or weakness of any building which they design. Ought such persons to be allowed to practise as architects? We say, decidedly, No. There ought to be an institution for the examination of young students practising architecture, analogous to that which exists for examining young candidates for practising medicine; and, should such an institution be formed, it will be wondered by posterity that large sums should ever have been entrusted to be laid out in building, to persons who have no other merit than that of being able to make fine drawings. That this is the case with many young architects, we can assert to be the case from our own knowledge and observation.

"If we desired a text-book for public instruction, upon the composition and resolution of forces," says Dr. Jamieson, "where shall we find a popular treatise combining the means with the end for such a laudable undertaking? We speak with deference, when we affirm that there is no treatise, except the one we produce, that embraces, to the same extent, and in such varied application, the twofold properties of precept and example in this important problem of the parallelogram of forces." (p. ix.)

ART. III. *A practical Treatise on Warming Buildings by Hot Water; and an Inquiry into the Laws of radiant and conducted Heat: to which are added, Remarks on Ventilation, and on the various Methods of distributing artificial Heat, and their Effects on Animal and Vegetable Physiology.* By Charles Hood, F.R.A.S. 8vo, pp. 216, and numerous Woodcuts.

THERE are very few subjects that architects and builders know less about than that of heating by hot water. As to the employers of this mode of heating, their ignorance on the subject is obvious from the dangerous methods which they adopt. Even the dangers attendant upon a common close boiler are not generally understood. As, however, we intend to review this book at

length in a future Number, we shall here only give the Table of Contents, and strongly recommend the work to every architect, or person in any way connected with the heating of houses by hot water.

Contents. Introduction. Chapter I. On the cause of circulation of water, and its consequences. Chap. II. On the application of the principles. Chap. III. On the proportionate sizes of various parts of the apparatus. Chap. IV. On permanence of temperature, depending on the form and size of the boiler and pipes. Chap. V. On the size and construction of furnaces. Chap. VI. On the laws of heat. Chap. VII. Experiments on cooling. Chap. VIII. On the application of the laws of heat, to determine the proper size of an apparatus for heating any description of building. Chap. IX. On peculiar modifications of the hot-water apparatus. Chap. X. General application and summary. Chap. XI. On ventilation. Chap. XII. On the various methods used for distributing artificial heat. Tables, &c. Index.

ART. IV. *Catalogue of Works on Architecture, Building, and Furnishing, and on the Arts more immediately connected therewith, recently published.*

HOPPER *versus* Cust, on the subject of rebuilding the new Houses of Parliament. 8vo, pp. 36.

We recommend this pamphlet to all those who take an interest in the controversy to which it alludes.

An Address to the "Leading Men of Manchester," suggested by a Letter on establishing a School of Design. By R. B. Haydon, Esq. Inserted in the *Manchester Guardian* of Sept. 17. 1837, by J. W. Hance. Reprinted from the *Manchester Courier*, with considerable Additions. Pamph. 8vo, pp. 22.

This is a spirited pamphlet, highly creditable to all concerned.

ART. V. *Literary Notice.*

ARCHITECTURAL *Illustrations of the Temple Church, London*, drawn and engraved by Robert William Billings, Associate of the Institute of British Architects, will shortly appear.

THIS work will contain thirty-one engravings, principally in outline, embracing plans, elevations, sections, details, and perspective views of this interesting church; also a short historical and descriptive account. Most of the eminent London architects have already sent their names to the subscription list.

MISCELLANEOUS INTELLIGENCE.

ART. I. *Foreign Notices.*

FRANCE.

PAVING with *Asphaltum*. — They are laying down a new style of *trottoir*, or foot-pavement, in Paris, which seems to answer very well; and would make capital flooring for large buildings, because it is easily susceptible of embel-

lishment in the mosaic manner. The ground, having been leveled, is covered with about 3 in. of concrete, again leveled, and covered with a sort of black pebble jam, being a mixture of pebbles (gravel), about the size of currants, boiled in pitch, and laid on hot ; and then smoothed, and powdered with fine sand. It makes a beautiful, hard, firm, and level pavement ; and it only remains to see how it will last. It is not dear ; because, when they break up the old stuff, they have only to remelt it, and it does again. (*Extract of a letter dated Paris, Nov. 10. 1837. Communicated by G. B. W., Dec. 1. 1837.*)

NORTH AMERICA.

New Stove for Carriages.—An individual in Washington has invented a new kind of stove for heating the interior of carriages, which is said to be of great utility. The stove occupies very little room, consumes a small quantity of fuel, and produces no smoke. It has been used in many of the railway carriages in the United States. (*L'E'cho, &c., Nov. 8. 1837.*) See the account of Joyce's self-consuming stove, in *Gard. Mag.*, Jan. 1838, p. 47.

ART. II. Domestic Notices.

ENGLAND.

LANCASHIRE. — *Manchester, Nov. 13. 1837.* — You will be glad to hear that there is some prospect of our having a school of design here before long, and that a better feeling for art generally is gradually developing itself in this quarter of the world. An individual (Mr. George Jackson) has lately delivered two lectures on the subject at the Mechanics' Institution here ; and, still later, Mr. Hance delivered two lectures at the Athenæum : one on the advantages of cultivating a taste for the fine arts ; and the other, on establishing a school of design in Manchester. I am happy to say they were well received, and, I trust, will serve to draw attention to so important a subject.

The Royal and Mechanics' Institutions are both bestirring themselves in the matter ; but I am afraid that their respective plans will contemplate an union of the proposed establishment with their own Institutions, and I am decidedly of the opinion of Mr. Haydon, that it should stand by itself, free from, and unshackled by, the government of any other institution, and "be *exclusively* devoted to art and manufactures."

I am also happy to say that the Manchester Architectural Society is in a most flourishing condition. James Heywood, Esq., president of the Athenæum, has just sent us his ten-guinea fee for admission as honorary member ; and several of the most influential and talented individuals have joined us (both in and out of the profession). Charles Barry, Esq., is an honorary member. We have above forty members already, and several are proposed at every meeting. I do not know whether you know anything of the rise and progress of this Society. In February last, Mr. Hance sent a letter to the principal offices in the town, inviting the young men in them to join in the formation of a society for mutual improvement and advancement in public taste in architecture. We called a general meeting for a certain evening, at eight o'clock : at half past, there were just five persons present. We began to despair ; however, in another quarter of a hour, or so, we mustered nearly twenty, who were unanimous in the resolution of forming a Society ; and so it *was* formed, and has hitherto outdone our most anxious expectations. The Society has just taken a large house in Mosley Street, and fitted up some handsome rooms. You will, no doubt, have perceived, from the copy of rules I sent you some time back, that we have a general meeting once a month, at which a paper is read. These are very interesting meetings, and afford the members much gratification, and, I trust, improvement. In addition to these, we have a *conversazione* every three months, in order to excite a love of the art among the inhabitants, who are admitted freely. These meetings are always well attended, and have attracted much

notice. We intend opening our new rooms on the first Wednesday in December, with a splendid *conversazione*; and, after we are settled, we purpose having courses of lectures on subjects connected with architecture, in all its various departments. We shall also have a drawing school, for the study of casts and antique models, of which we shall soon have a very good collection. We have already established a library of the best works on art, which circulate among the members; and, as they are freely read, I hope, ere long, we shall see a decided improvement in professional taste; for, *entre nous*, the generality of the so-called professions are sunk in the lowest depths of barbarism. You may assure any of the members of the Institute of British Architects, who may be visiting this part, of every attention in our power to bestow, to render a visit agreeable, and, I trust, profitable; as I think Mr. Godwin will allow that we have something worthy of notice here.

Mr. Heigham has been delivering four lectures at the Athenæum, upon the History of Architecture; and is now repeating them at the Mechanics' Institution. Altogether, I think there is a decided improvement in the public feeling for the art. Arthur Parsey will shortly deliver some lectures on perspective here (at the Mechanics' Institution). I look forward with much curiosity to hear him, as he seems to have very unique notions on the subject. It appears to me, from what little I know of his theory, that, if not absurd, it is at least impracticable or useless in practice. However, I shall be able to form a more correct opinion when he has explained it himself. Mr. Haydon will likewise be down here shortly, to give us some more lectures, and rub up our ideas with respect to the school of design. The general state of business in our profession is somewhat flat at present, and has been so all the year. Mr. Lane is erecting some good houses in the Victoria Park, which will really be a great ornament; and we expect shortly to commence a church there, of which Mr. Hance is at present making the drawings: it will, I believe, be a handsome Gothic structure, in the perpendicular style, with a spire. Mr. Atkinson is erecting a beautiful bit (quite a gem) at Cheetham Hill: a Gothic church, likewise perpendicular, and having also a spire, highly enriched: *detail* excellent. It is much admired, and will increase his fame much, and, likewise, the general taste. A few such examples, and we should have nothing to fear. Mr. Tattersall is likewise giving us a specimen of his taste in the Union Bank, Mosley Street: a handsome Corinthian front, with engaged columns, on a rustic basement; with projecting balconies to the windows, the effect of which I do not like: they crowd it too much; and the basement, also, is too light, and the rustics not near deep enough cut. It is, however, a very creditable affair. The Commissioners of Highways have, I understand, been finding fault, in their wisdom, with the bold projection of the cornice: they had better keep their eyes on the ground, and clear away all obstructions there. Our exhibition will close on Saturday next: it has not been a very good one. A few first-rate pictures there certainly are, by Etty, Cooper, Landseer, &c.; but the generality very indifferent. I do not know how it is, but Liverpool generally outshines us. I suppose there is more chance of selling pictures there, or, perhaps, the hanging is more judicious: here it is *horrible*. I am credibly informed that the hanging this year was left to one of the porters of a celebrated print-seller, who has *fourteen shillings* a week for carrying out pictures, &c.: a *very efficient hand*, no doubt. If my authority were not good, I could not believe it. I see that Welby Pugin has been undergoing some severe lashing. His *Contrasts* are certainly rather too bad; and yet I think they will have good effect; at least, in directing observation to modern barbarisms, and inducing people to compare different works. His square style just suits more than one building of much pretension here. He is, perhaps, too enthusiastic, and somewhat illiberal in his opinions: but that is better than being lukewarm, and having no feelings at all. I like that article in your last Magazine, "On the Poetry of Architecture," much. For my part, I think those essays the best portion of the work. Mr. Barry is making a beautiful thing of our Athenæum. I suppose you know that it is in his best Italian style: it will be a fine con-

trast to his Royal Institution, with which it is in almost juxtaposition. He is also erecting a beautiful Gothic chapel for the Unitarians, in Upper Brook Street, Charlton, which is expected to rival his church of Saint Matthew, the spire of which is the most elegant I ever saw. — *J. W. II.*

ART. III. *Institute of British Architects.*

JULY 24. 1837. — P. F. Robinson, V.P., in the chair.

Elected. The Most Noble the Marquess of Lansdowne, and His Grace the Duke of Sutherland, as Honorary Fellows.

Presented. Two pamphlets, describing a new Method of covering Roofs, lately invented in Prussia. The Vienna Journal of Architecture and Engineering. White's Western Improvements. Library Catalogue of the Institution of Civil Engineers. An Engraving of Manby's Apparatus for Warming and Ventilating Buildings. Three Fragments from Worcester Cathedral. An Impression of a Medal representing the Place de Bordeaux, and Statue erected to the memory of Louis XV.

Read. A communication from S. J. Har, on the recent Discoveries in the ancient Theatre of Catania. A paper by M. Cheverton, on Mechanical Sculpture. The Report of the Committee appointed to examine the Elgin Marbles, and to report whether any Traces of polychromatic Embellishments are to be found on them. A paper on the Employment of Painting on the funeral Monuments of the Greeks.

This meeting was the last for the session of 1836-7.

Dec. 4. 1837. The first ordinary meeting for the session, 1837-8. J. B. Papworth, V.P., in the chair.

The president announced that her Majesty had consented to become the patroness of the Institution.

Elected. J. Medland, Architect, Gloucester, as Associate.

Presented. A View of Wells Cathedral. Civil Engineer, Nos. 1. to 3. Edwards on the Napoleon Medals. Minutes of the Proceedings of the Institution of Civil Engineers. View of the Chancel of the Church of Stratford upon Avon. View of the proposed Pier and Improvements at Northfleet. A Volume of 93 original drawings by Panini, Bibiena, Oppenord, Benvenuto Cellini, and other celebrated artists.

Read. Part I. of the History of the English School of Gothic Architecture, by J. Blore, Associate. A paper by the Chevalier Von Klenze, on a peripteral Ionic Temple erected by him in the Park at Munich, and decorated with polychromatic Embellishment.

Exhibited. A model of Bunnett and Corpe's Patent Revolving Safety Shutters.

ART. IV. *Obituary.*

JOHN Linnell Bond, Esq. — It is with extreme regret that we announce the death of this highly gifted artist and truly admirable man, who expired at his house in Newman Street, on Sunday last, after many months of great bodily weakness. As an architect, he was, in knowledge, judgment, and taste, inferior to none of his contemporaries. For examples, we may refer to his design for Waterloo Bridge, justly considered one of the finest ornaments of the metropolis, which, with all the necessary estimates, was made by him for the projector, the late Mr. George Dodd, engineer; the principal inn at Stamford, executed for Sir Gerard Noel, and many other designs prepared for the same honourable baronet, which were never carried into effect; and others of a high character, now in possession of his brother, Mr. William Bond. Mr. Bond was well versed in classical literature. (*Literary Gazette*, Nov. 11. 1837.)

THE ARCHITECTURAL MAGAZINE.

FEBRUARY, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *Suggestions relative to the best Models of Style to be adopted in designing the new Houses of Parliament in the Gothic Taste.*
By HENRY NOEL HUMPHREYS.

THE persevering and careful research which has been devoted, of late years, to the study of that style of architecture conventionally termed Gothic, has produced a degree of excellence hitherto little expected in the imitation of its beautiful details, and even in some of its higher attributes; and has inoculated the British architectural world with a mania, not only for restoring the old, but also for erecting new, buildings in that style, but little anticipated by its admirers of twenty years ago. When the first brightness of the novelty and fashion consequent upon the introduction of the modern Roman, or rather Italian, style began to wear off, a few original minds, capable of looking in a different direction to the crowd, turned back, and perceived the forgotten beauties of the Gothic, which it had so completely superseded.

In the height of the Italian mania, even Inigo Jones, with all his genius, was so much enslaved by its influence, as to build a Roman portico to the Gothic St. Paul's. But a century later, when the tyranny of the fashion was in some degree abated, a man of inferior genius, Sir C. Wren, designed the towers of Westminster Abbey in a style more in accordance with that of the building to which they were to be appended; thus making an actual attempt at Gothic. This was *le premier pas*: other restorations were attempted, with a praiseworthy attention to the style with which they were to amalgamate; with, however, it must be confessed, most lamentable success.

Then came Horace Walpole's open and declared admiration of the discarded style of our noble cathedral and collegiate architecture, which gave a new impulse to the revived appreciation of the Gothic; and many efforts were made in that style more successful than his own fanciful and ridiculous attempts at Strawberry Hill: for he was no architect. He admired the Gothic rather with the eye of a poet. He saw and felt the picturesque, and occasionally even magnificent and sublime

results; but had no idea of the practical means by which they were arrived at. Yet the impetus had been given; and the style, though confined almost entirely to a few additions to, or alterations of, old buildings, went on improving. The next era in the rise of the modern Gothic is, perhaps, the time of Wyatt and his school, who received immense sums for restorations and additions to our cathedral and collegiate buildings, carried on upon a scale as yet unprecedented.

Still, however, there was no proper feeling of the true spirit of Gothic architecture; but, since that period, many men of elegant genius and unwearying industry, in answer to the calls of an already prevailing taste, have devoted their whole energies to the cultivation of this style; and some of our finest cathedrals have been restored to their original state with a perfection and accuracy that need not shun the scrutiny of their great Gothic masons themselves, if their shades ever walk in the dim light of those lofty ailes. Here, perhaps, having restored, and thus preserved, to the admiration of yet distant generations, those beautiful historic monuments of our nation, the practice of Gothic architecture ought to have stopped. The *resuscitated* Gothic can only be successful when the most accurate and almost servile imitation is adhered to; and the practice of art, in such a spirit, seems ill in accordance with the progressive genius of our most enlightened age. An age which the system of general education, though yet in its infancy, has filled with a thirst for knowledge and advance, and the means of acquiring them, unequalled at any period of which we have record, seems to call for that *originality* which must be the result of a proper adaption of our new and varied knowledge to the new and varied wants of our more elevated position. Are we, then, to be copyists in one of the most noble arts of civilisation, architecture? But a discussion upon the means of *originating* a style in accordance and on a level with the taste, science, and feeling of the age, would lead me far from my subject. Fashion has been beforehand with me; and, as I have said in the first few lines of this paper, the careful study and successful practice of the Gothic in restoration has led to its adoption in new buildings. Churches and theatres, gin-shops and dissenting chapels, gentlemen's seats and peasants' cottages, are springing up in every direction in this style, studied, in many instances (in all successful ones), with the antiquarian and curious accuracy of an archæologist. Such being the case, I suppose I must go with the stream as far as it goes, so long as it is too strong for me; for the government takes the lead in the state barge, pulling away with bold and lusty strokes, having determined to build the greatest building in the country, the seat of legislature of this great empire, in the Gothic style. Admitting the improbability of stemming the torrent, we may yet take

measures for securing the best part of the stream ; and, in such an attempt, I venture the ensuing remarks. It being decided that the building was to be Gothic (or Elizabethan), there was an open competition for the glory, as well as profit, of becoming its architect. The prize, with reference to the competition merely of the competing designs, has been most justly awarded : so far, all is well. Now comes the consideration whether, even by the best, the capabilities and different applications of the Gothic have been, as yet, sufficiently studied and mastered, to enable them to undertake, with the *greatest possible effect* of which the style is capable, the erection of so great and novel a work as the new Houses of Parliament.

Most of our architects who have attained to any celebrity in the Gothic have, no doubt, thoroughly studied all the fine monuments of the style which this country possesses ; and, among our cathedrals, abbeys, colleges, and castles, there is doubtless a fine field for study, and a rich harvest to reap : yet none of these examples display the capabilities of the Gothic, in its application to the purely civic purpose of a *senate house*.

We have, it is true, in the last phase of pure Gothic art, the Tudor style, as it has been termed, *private residences* ; but these do not possess the dignity requisite in a public building, and yet display beauties so peculiar and distinct, as to exemplify most completely the facility with which the Gothic artists adapted their architecture to any new and specific purpose.

With the accession of the first of the Tudor family, ceased the disastrous contention of York and Lancaster ; and other simultaneous causes tended to settle that public security, which, for the first time, became sufficiently felt to induce wealthy individuals to descend from their castles and strongholds, and erect open and elegant mansions in the plains ; and here, again, as in all former instances, the *adaptability* of the style was as beautifully exemplified, as the endless invention and ingenuity of its professors were incontestably proved. Thus we see that the Gothic, in what may be termed its *natural existence*, suited itself with wonderful pliability to every new purpose to which it was applied ; producing, at the same time, in each fresh application, a peculiarity of feature and feeling which strongly and characteristically marked the individual, without, as it were, destroying the harmony of the family likeness.

This we may easily picture to ourselves by imagining a group. Let there be a castle, with its machicolated gateway, upon an eminence ; the abbey, with all its distinctive features, upon a rich slope of green, at a bend of the river ; the mansion, for which the castle above seems to have been deserted, just glancing from a grove of noble elms, with its bay windows and quaint porch ; and, above the half-leveled walls of the adjacent town, the noble

towers of the pinnacled cathedral, and the square mass of the collegiate or school buildings. Here we have the various members of the Gothic family of this country. How harmoniously they group ! and yet how distinctly the well-defined features of each individual at once proclaim its different constitution and peculiar purpose ! It will be seen, moreover, that this family group does not present a model for a senate house, or structure of similar character ; and yet, had one of those architects who so wonderfully adapted their system to any new purpose upon which they were called to exercise it, been required to execute such a building, it is quite clear, from the examples before us, that he would not only have succeeded admirably, but have imparted to the novel work a stamp and character peculiar to itself. He would, in short, have furnished us with the model required.

Such would have been the result during the *natural existence* of the art ; but, in the reign of what may be termed its *resuscitation*, how different ! The present existence of the Gothic is but a galvanic species of being, a sort of muscular motion, independent of, and deprived of, the vital principle. The vivifying spirit has departed ; the power of shooting forth new members in endless variety and combination, and yet, as it were, with the same parent sap thrilling in every fibre, exists no more. Without a model of precisely similar character, the Gothic cannot *now* be successfully practised. For example, let us imagine a modern professor of the art attempting to build a Gothic cathedral, with only a Gothic castle before him as a model ; or let him attempt the construction of a Tudor mansion, even with the combined advantages of the cathedral and castle before him as types of his intended structure ; and let any person acquainted with the subject paint the result upon the canvass of imagination, and he will laugh at the bare idea. Hence it appears, that, if we persist in being Gothic architects, we must, to stand any chance of success, become, to a certain extent, copyists ; and copyists not only of the broad principles, but even more particularly of the individual features, in which the true and ductile graces of the style are developed. In fact, I believe it will readily be admitted, that the Gothic, except as a style of careful imitation, could not now exist. This, indeed, is sufficiently proved by a reference to the works of such architects as have adopted some of its principles as a groundwork, or stock upon which to engraft their own fanciful and frequently unmeaning inventions ; the mean, the unpleasant, the barbarous, I had almost said disgusting, effect of which combination must be apparent to even an ignorant observer, capable of the least natural perception of the beautiful and symmetrical.

Having endeavoured to establish the necessity of a model of precisely similar character, in order to erect a building in this

taste with the *greatest possible* effect of which the art is capable, I come to this point: Whence did Mr. Barry derive the model for his design for the Houses of Parliament? That it was the best, by far the best, nay, in my humble opinion, the only tolerable one, in the competition, is no answer; that he has designed and erected other buildings in the style, of almost faultless perfection, is no answer. For the most successful of these he had models, and knew how to use them, of precisely similar character. The Gothic family of England, it has been seen, did not present a model of the application of the style to a purpose similar to the one in question; and Mr. Barry, without looking farther, has endeavoured to supply the deficiency by the substitution of a mixture of the cathedral and collegiate manners (if I may be allowed the use of such distinctive terms), and has produced an imposing design; and, considering the insurmountable difficulties which must ever encounter a modern *Goth* in the pursuit of such a course, a clever adaption. But is it the true spirit in which one of the great Gothic masons themselves would have conceived and modeled such a structure? With all diffidence, but strong conviction, I reply, certainly not. Before I directly indicate the *true model* for such a building, I would endeavour to point out a number of faults almost inevitably consequent upon the system pursued; but space prevents my entering much into detail upon this part of the subject, and I shall only advert to two. In the first place, I cannot but think that no Gothic architect, in what I have termed the *natural growth* of the art, would have designed a building of such importance with the daring disregard of symmetry which characterises Mr. Barry's work. In the present instance, I confine the term "symmetry" to the meaning of a general uniformity in corresponding parts. A *façade* conceived upon this principle should never have the appearance of terminating at one extremity with a colossal tower, and at the other with a slender steeple.* The great Gothic artist always preserved the balance and general uniformity of the masses of corresponding portions of a building, however he allowed his exuberant fancy to run wild in detail. In fact, uniformity of corresponding parts was as essential in Gothic, as in Grecian, Egyptian, or any other perfect style of architecture. Our modern students of the Gothic have been too apt to look at the picturesque masses of our cathedral and collegiate buildings, with all their additions by

* This effect is produced in the river *façade*, though complete in itself, by not placing the great tower in the centre of the building, whilst the clock-tower, and a corresponding object, should have occupied each extremity. These objects, it is true, belong to the other front, which the peculiarity of the scite renders of necessity irregular; but they might, at all events, have been made to minister to the effect of the river front, where the most perfect symmetry was within the reach of the architect.

various hands at various periods, as though they were perfect works. They are anything rather than complete or perfect works; and any Gothic artist of repute, of any period, would have deemed himself disgraced by designing such an irregular mass as the very finest of them, picturesque as they are; and, if we refer to such *original designs* as are still in existence of some of the finest Gothic buildings of Europe, we shall find this axiom fully illustrated, with but few and trifling exceptions. And yet it will be found, upon referring to a great number of the plans proposed for the Houses of Parliament, that the designers have carefully copied the irregular grouping of our ecclesiastical buildings, which have served them as models*; so difficult is it, when we become copyists, to avoid the deformities of our model. We sink, to borrow a simile from a sister art, into the materialism of the Flemish school, where we should catch the idealism of the Italian. A great sculptor, when he makes a statue, seeks to produce what nature *intended*; what the model *should* have been, rather than what it is. So should our Gothic student endeavour to imagine what the original planner and creator of one of these noble piles would have made could he have lived (which has been but rarely the case) to complete his projected work; instead of copying the deformities, if I may use so strong a term for the irregularities which time, change of taste, and a thousand such accidents, have accumulated.†

The other point I would urge against Mr. Barry's design is, the introduction of buttresses between the windows, along the whole line of the river front. I would either have made my walls of sufficient strength to do without them, or have so concealed them by suitable decoration as to have rendered them, if possible, ornamental. A great authority, M. Merrimée, director of the historic monuments of France, has denounced the buttress as the most unsightly expedient of the Gothic architect. They give to the finest building the appearance of a tottering and propped ruin; particularly where the flying buttress is resorted to, which always produces, to use his own words, *l'effet d'une ruine chancelante*. But they had great objects to attain by means of this device: the immense height of their interiors (the great secret of their wonderful effect) produced, in conjunction with the high roof, so great a thrust upon the outer walls, as to render some such contrivance absolutely necessary, unless they had made walls of an extraordinary, and almost impossible, thickness; whilst, by their scientific application of this

* It is but justice to observe that Mr. Barry's design was by far the *most* regular among the principal designs.

† A careful study of such *original designs* as are still preserved cannot be too strongly recommended.

principle, it is wonderful what they effected, with walls of a lightness almost incredible. Nevertheless, when they had not the inconveniences of great height, without any cross ties to counteract the thrust of the roof, to contend with, they rarely resorted to the unsightly buttress: it was the great object alluded to that led to its adoption; and it was essentially an adjunct of church architecture, where they sacrificed every thing to the aerial sublimity of their interiors. It is, however, well known that custom caused it sometimes to be adopted, as well in that class of buildings, as in others, where it was not always absolutely necessary. But, in their great civic buildings, where the exterior walls were no longer a shell constrained to support the weight and thrust of an enormous roof at a great altitude, they at once dispensed with the *prop*; and the *façades* of their beautiful *hôtels de ville* were undisfigured by the unsightly buttress.

So much for the two blemishes which I have ventured to point out in Mr. Barry's design; namely, want of symmetry, or uniformity in the corresponding parts; and the unnecessary and profuse introduction of the buttress. It will at once be seen that my only object in all this is, to prove that, without a model in buildings of precisely similar character, the modern Gothic architect *must* fail to produce the *true* effects of the style; and that, to a certain extent, even Mr. Barry himself has done so.

Among his studies, he found no model, either in mass or detail, precisely suited to his purpose; and he proceeded at once without looking for one, to supply the deficiency by such combinations as his own genius of adaption suggested. Such treatment of the Gothic is like writing original poetry in a dead language; the effect of which is but too well known: for who would compare for a moment even the all-perfect Latinity of Trissino with the lay of the meanest Norman bard who sang in his mother tongue?

No! in adapting to modern use a dead language, or a dead architecture, we must content ourselves with translations; and, in the present instance, the only difficulty appears to be, to find an original. I point at once to the noble *hôtels de ville* of Germany and the Low Countries. Here, from the purest source, we are at once furnished with models for such a building as the British Houses of Parliament. How these noble *senate houses* of the free towns of the Empire and the Low Countries escaped the attention of Mr. Barry and the other competitors, appears to me both inexplicable and extraordinary, particularly when we consider that the plans and elevations of many of the most beautiful of them were within the reach of every architect, in various works at that time before the public.

These splendid senate houses, I cannot but reiterate, offer the true models of the application of the Gothic to such a purpose as the rebuilding of the Houses of Parliament. They present

original and distinguishing features, of such peculiar fitness to their purpose, as to render any modern attempts at creating a better adaption of the style to buildings of a similar class futile in the extreme. So, at least, it appears to me, and, I must think, to all who have studied, or even seen, any of the finest of these beautiful structures. To call attention to any in particular might only lead to cavil upon minor points, or I would make out a long list of such as, in beauty and unity of design, magnificence (I do not mean magnitude) of plan, characteristic beauty of detail, and, above all, in felicitous adaption of the style to the purpose, would leave far behind any of the plans in the late competition; and which would have required but little modification to suit them to the actual purpose in question. Not that I would have had an architect make a servile copy of any entire mass, but dexterously to seize the characteristic features both of general conception and detail.

Now, it is, perhaps, necessary for me to explain that I do not impute want of genius to any of the eminent men who illustrate the present school of architecture in this country; very far from it: I simply impute to them a want of tact in seizing the proper character to be given to the building which they were designing; and this was only to be obtained among the models alluded to, the natural models for such a structure as parliament houses in the Gothic style. This true character they sought to supply by studies among our cathedrals, abbeys, Tudor mansions, and Elizabethan seats; and were thus driven to an incompatible combination of styles, to meet a purpose the true model of which was before them, in all the completeness of a perfect growth and developement, if they would but have seized it. Even the genius of Barry, by neglecting the pure source, has failed to produce a pure work.

I have penned these observations in all modesty, however strongly I may occasionally, from complete conviction, have expressed myself. My only aim has been, if it is yet time, to call the attention of those who are competent to take advantage of them, to the characteristic beauties of the Gothic *senate houses* of Germany and Flanders, as the proper types of British houses of Parliament, if they *must* be erected in the Gothic style.

London, December, 1837.

ART. II. *The Poetry of Architecture.* By KATA PIUSIN.

NO. 2. THE COTTAGE — continued.

III. *The Mountain Cottage.* — *Switzerland.*

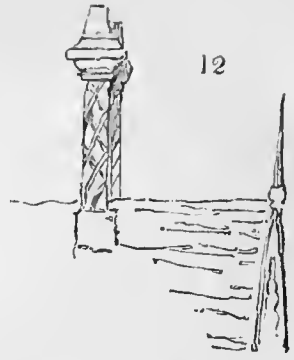
IN the three instances of the lowland cottage which have been already considered, are included the chief peculiarities of

style which are interesting or important. I have not, it is true, spoken of the carved oaken gable and shadowy roof of the Norman village; of the black crossed rafters and fantastic projections which delight the eyes of the German; nor of the Moorish arches and confused galleries which mingle so magnificently with the inimitable fretwork of the grey temples of the Spaniard. But these are not peculiarities solely belonging to the cottage: they are found in buildings of a higher order, and seldom, unless where they are combined with other features. They are therefore rather to be considered, in future, as elements of street effect, than, now, as the peculiarities of independent buildings. My remarks on the Italian cottage might, indeed, be applied, were it not for the constant presence of Moorish feeling, to that of Spain. The architecture of the two nations is intimately connected: modified, in Italy, by the taste of the Roman; and, in Spain, by the fanciful creations of the Moor. When I am considering the fortress and the palace, I shall be compelled to devote a very large share of my attention to Spain; but, for characteristic examples of the cottage, I turn rather to Switzerland and England. Preparatory, therefore, to a few general remarks on modern ornamental cottages, it will be instructive to observe the peculiarities of two varieties of the mountain cottage, diametrically opposite to each other in most of their features; one always beautiful, and the other frequently so.

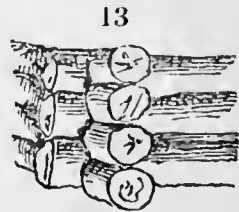
First, for Helvetia. Well do I remember the thrilling and exquisite moment when first, first in my life (which had not been over long), I encountered, in a calm and shadowy dingle, darkened with the thick spreading of tall pines, and voiceful with the singing of a rock-encumbered stream, and passing up towards the flank of a smooth green mountain, whose swarded summit shone in the summer snow like an emerald set in silver; when, I say, I first encountered in this calm defile of the Jura, the unobtrusive, yet beautiful, front of the Swiss cottage. I thought it the loveliest piece of architecture I had ever had the felicity of contemplating; yet it was nothing in itself, nothing but a few mossy fir trunks, loosely nailed together, with one or two grey stones on the roof: but its power was the power of association; its beauty, that of fitness and humility.

How different is this from what modern architects erect, when they attempt to produce what is, by courtesy, called a Swiss cottage. The modern building known in Britain by that name has very long chimneys (see *fig. 12.*), covered with various exceedingly ingenious devices for the convenient reception and hospitable entertainment of soot, supposed by the innocent and deluded proprietor to be "meant for ornament." Its gable roof slopes at an acute angle, and terminates in an

interesting and romantic manner, at each extremity, in a tooth-pick. Its walls are very precisely and prettily plastered; and it is rendered quite complete by the addition of two neat little bow windows, supported on neat little mahogany brackets, full of neat little squares of red and yellow glass. Its door is approached under a neat little veranda, "uncommon green," and is flanked on each side by a neat little round table, with all its legs of different lengths, and by a variety of neat little wooden chairs, all very peculiarly uncomfortable, and amazingly full of earwigs: the whole being surrounded by a garden full of flints, burnt bricks, and cinders, with some water in the middle, and a fountain in the middle of it, which wo'n't play; accompanied by some goldfish, which wo'n't swim; and by two or three ducks, which will splash. Now, I am excessively sorry to inform the members of any respectable English family, who are making themselves uncomfortable in one of these ingenious conceptions, under the idea that they are living in a Swiss cottage, that they labour under a melancholy deception; and shall now proceed to investigate the peculiarities of the real building.



The life of a Swiss peasant is divided into two periods; that in which he is watching his cattle at their summer pasture on the high Alps*, and that in which he seeks shelter from the violence of the winter storms in the most retired parts of the low valleys. During the first period, he requires only occasional shelter from storms of excessive violence; during the latter, a sufficient protection from continued inclement weather. The Alpine or summer cottage, therefore, is a rude log hut, formed of unsquared pine trunks, notched into each other at the corners (see *fig. 13.*). The roof, being excessively flat, so as to offer no surface to the wind, is covered with fragments of any stone that will split easily, held on by crossing logs; which are, in their turn, kept down by masses of stone; the whole being generally sheltered behind some protecting rock, or resting against the slope of the mountain, so that, from one side, you may step upon the roof. This is the *châlet*. When well grouped, running along a slope of mountain side, these huts produce a very pleasing effect, being never obtrusive (owing to the prevailing greyiness of their tone), uniting well with surrounding objects, and bestowing at once animation and character.



* I use the word Alp here, and in future, in its proper sense, of a high mountain pasture; not in its secondary sense, of a snowy peak.



But the winter residence, the Swiss cottage, properly so called, is a much more elaborate piece of workmanship. The principal requisite is, of course, strength; and this is always observable in the large size of the timbers, and the ingenious manner in which they are joined, so as to support and relieve each other, when any of them are severely tried. The roof is always very flat, generally meeting at an angle of 155° , and projecting from 5 ft. to 7 ft. over the cottage side, in order to prevent the windows from being thoroughly clogged up with snow. That this projection may not be crushed down by the enormous weight of snow which it must sometimes sustain, it is assisted by strong wooden supports (seen in *figs. 14. and 15.*), which sometimes extend half down the walls for the sake of strength, divide the side into regular compartments, and are rendered ornamental by grotesque carving. Every canton has its own window. That of Uri, with its diamond wood-work at the bottom, is, perhaps, one of the richest. (See *fig. 15.* in p. 63.) The galleries are generally rendered ornamental by a great deal of labour bestowed upon their wood-work. This is best executed

in the canton of Berne. The door is always 6 or 7 feet from the ground, and occasionally much more, that it may be accessible in snow; and it is reached by an oblique gallery, leading up to a horizontal one, as shown in *fig. 14*. The base of the cottage is formed of stone, generally whitewashed. The chimneys must have a chapter to themselves: they are splendid examples of utility combined with ornament.

Such are the chief characteristics of the Swiss cottage, separately considered. I must now take notice of its effect in scenery.

When one has been wandering for a whole morning through a valley of perfect silence, where every thing around, which is motionless, is colossal, and every thing which has motion resistless; where the strength and the glory of nature are principally developed in the very forces which feed upon her majesty; and where, in the midst of mightiness which seems imperishable, all that is indeed eternal is the influence of desolation; one is apt to be surprised, and by no means agreeably, to find, crouched behind some projecting rock, a piece of architecture which is neat in the extreme, though in the midst of wildness, weak in the midst of strength, contemptible in the midst of immensity. There is something offensive in its neatness: for the wood is almost always perfectly clean, and looks as if it had been just cut; it is consequently raw in its colour, and destitute of all variety of tone. This is especially disagreeable, when the eye has been previously accustomed to, and finds, every where around, the exquisite mingling of colour, and confused, though perpetually graceful, forms, by which the details of mountain scenery are peculiarly distinguished. Every fragment of rock is finished in its effect, tinted with thousands of pale lichens and fresh mosses; every pine trunk is warm with the life of various vegetation; every grassy bank glowing with mellowed colour, and waving with delicate leafage. How, then, can the contrast be otherwise than painful, between this perfect loveliness, and the dead, raw, lifeless surface of the deal boards of the cottage. Its weakness is pitiable; for, though there is always evidence of considerable strength on close examination, there is no *effect* of strength: the real thickness of the logs is concealed by the cutting and carving of their exposed surfaces; and even what is seen is felt to be so utterly contemptible, when opposed to the destructive forces which are in operation around, that the feelings are irritated at the imagined audacity of the inanimate object, with the self-conceit of its impotence; and, finally, the eye is offended at its want of size. It does not, as might be at first supposed, enhance the sublimity of surrounding scenery by its littleness, for it provokes no comparison; and there must be proportion between objects, or

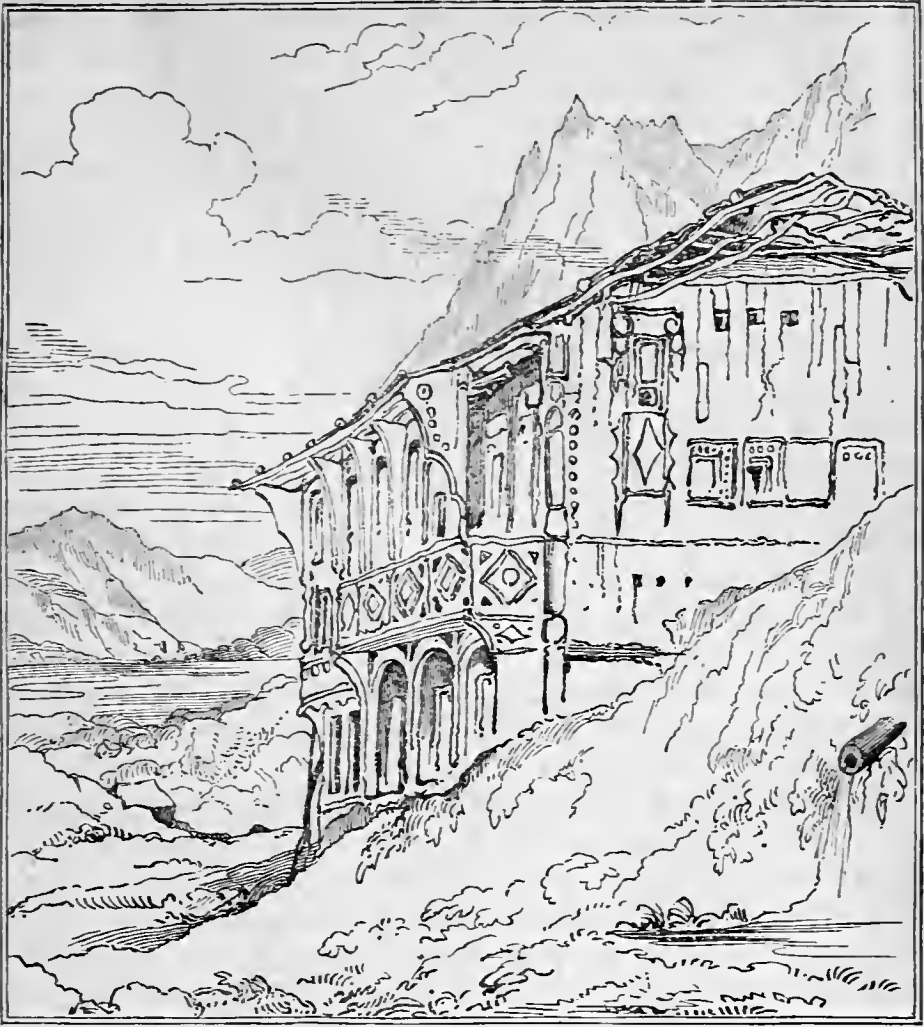
they cannot be compared. If the Parthenon, or the Pyramid of Cheops, or St. Peter's, were placed in the same situation, the mind would first form a just estimate of the magnificence of the building, and then be trebly impressed with the size of the masses which overwhelmed it. The architecture would not lose, and the crags would gain, by the juxta-position; but the cottage, which must be felt to be a thing which the weakest stream of the Alps could toss down before it like a foam-globe, is offensively contemptible: it is like a child's toy let fall accidentally on the hill side; it does not unite with the scene; it is not content to sink into a quiet corner, and personify humility and peace; but it draws attention upon itself by its pretension to decoration, while its decorations themselves cannot bear examination, because they are useless, unmeaning, and incongruous.

So much for its faults; and I have had no mercy upon them, the rather, because I am always afraid of being biassed in its favour by my excessive love for its sweet nationality. Now for its beauties. Wherever it is found, it always suggests ideas of a gentle, pure, and pastoral life. One feels that the peasants whose hands carved the planks so neatly, and adorned their cottage so industriously, and still preserve it so perfectly, and so neatly, can be no dull, drunken, lazy boors; one feels, also, that it requires both firm resolution, and determined industry, to maintain so successful a struggle against "the crush of thunder, and the warring winds." Sweet ideas float over the imagination of such passages of peasant life as the gentle Walton so loved; of the full milkpail, and the mantling cream-bowl; of the evening dance, and the matin song; of the herdsmen on the Alps, of the maidens by the fountain; of all that is peculiarly and indisputably Swiss. For the cottage is beautifully national; there is nothing to be found the least like it in any other country. The moment a glimpse is caught of its projecting galleries, one knows that it is the land of Tell and Winkelried; and the traveller, feels that, were he indeed Swiss-born, and Alp-bred, a bit of that carved plank, meeting his eye in a foreign land, would be as effectual as a note of the *Ranz des Vaches* upon the ear. Again, when a number of these cottages are grouped together, they break upon each other's formality, and form a mass of fantastic projection, of carved window and overhanging roof, full of character, and picturesque in the extreme: an excellent example of this is the Bernese village of Unterseen. Again, when the ornament is not very elaborate, yet enough to preserve the character, and the cottage is old, and not very well kept (suppose in a Catholic canton), and a little rotten, the effect is beautiful: the timber becomes weather-stained, and of a fine warm brown, harmonising delight-

fully with the grey stones on the roof, and the dark green of surrounding pines. If it be fortunate enough to be situated in some quiet glen, out of sight of the gigantic features of the scene, and surrounded with cliffs to which it bears some proportion; and if it be partially concealed, not intruding on the eye, but well united with every thing around, it becomes altogether perfect; humble, beautiful, and interesting. Perhaps no cottage can then be found to equal it; and none can be more finished in effect, graceful in detail, and characteristic as a whole.

The ornaments employed in the decoration of the Swiss cottage do not demand much attention: they are usually formed in a most simple manner, by thin laths, which are carved into any fanciful form, or in which rows of holes are cut, generally diamond-shaped; and they are then nailed one above another, to give the carving depth. Pinnacles are never raised on the roof, though carved spikes are occasionally suspended from it at the angles. No ornamental work is ever employed to disguise the beams of the projecting part of the roof, nor does any run along its edges. The galleries, in the canton of Uri, are occasionally supported on arched beams, as shown in *fig. 15.*, which have a very pleasing effect.

Of the adaptation of the building to climate and character, little can be said. When I called it “national,” I meant only that it was quite *sui generis*, and, therefore, being only found in Switzerland, might be considered as a national building; though it has none of the mysterious connexion with the mind of its inhabitants which is evident in all really fine edifices. But there is a reason for this: Switzerland has no climate, properly speaking, but an assemblage of every climate, from Italy to the pole; the vine wild in its valleys, the ice eternal on its crags. The Swiss themselves are what we might have expected in persons dwelling in such a climate: they have no character. The sluggish nature of the air of the valleys has a malignant operation on the mind; and even the mountaineers, though generally shrewd and intellectual, have no perceptible nationality: they have no language, except a mixture of Italian and bad German; they have no peculiar turn of mind; they might be taken as easily for Germans as for Swiss. No correspondence, consequently, can exist between national architecture and national character, where the latter is not distinguishable. Generally speaking, then, the Swiss cottage cannot be said to be built in good taste; but it is occasionally picturesque, frequently pleasing, and, under a favourable concurrence of circumstances, beautiful. It is not, however, a thing to be imitated: it is always, when out of its own country, incongruous; it never harmonises with anything around it, and



can therefore be employed only in mimicry of what does not exist, not in improvement of what does. I mean, that any one who has on his estate a dingle shaded with larches or pines, with a rapid stream, may manufacture a bit of Switzerland as a toy; but such imitations are always contemptible, and he cannot use the Swiss cottage in any other way. A modified form of it, however, as will be hereafter shown, may be employed with advantage. I hope, in my next paper, to derive more satisfaction from the contemplation of the mountain cottage of Westmoreland, than I have been able to obtain from that of the Swiss.

ART. III. *Notes on modern Architecture.* By AMICUS.

No. 3.

I TOOK a glance at the new building jutting out at the corner of Paternoster Row; but all idea of criticism was absorbed in the regret I felt, that so excellent an opportunity should have been lost for making a grand opening to St. Paul's and the new Post-

Office. Here, a line of buildings in continuation of St. Martin's le Grand, through Paternoster Row, to St. Paul's Churchyard, would have thrown open an area not to be equalled in any other part of the city; it would have also brought into one view two of the most extensive buildings: but, I fear, a niggardly economy has wholly frustrated this idea. In this spot might have been placed the equestrian statue of the Duke of Wellington; thus forming, altogether, one of the most interesting groups in London. In no situation can we obtain a good view of St. Paul's: although the best side of the building would not then have been presented to us, yet it was the only view that we have any chance of obtaining in the present time.

Who the parties interested in the improvements of London are I know not; but few of them, perhaps, possess opinions above the ordinary and commonplace interests of pounds, shillings, and pence; and all our improvements are intrusted to managers who have very little idea of sacrificing at the shrine of Taste. Can we talk of the noble spirit of the most enlightened city in the world, when all improvements of a liberal nature are tinged with commercial feeling? But the time has passed, I fear, to remedy this great oversight; and such another opportunity may not occur for a length of time.

I have called the New Post-Office one of the largest buildings in the city: but it does not follow that it is the best architectural design; for, although it is generally praised, it is but a commonplace production. Ask why it is praised, and you get such indiscriminate replies as, "It is grand," "noble," "large," "fine;" all which terms just amount to nothing: it is large, and the great secret in these commendations consists in this particular. The portico is the best feature in the building; but it possesses no novelty, except that of being larger than those of the same family dotted all over this great metropolis. But, if I say much of this, I shall have all the profession upon me at once; for how many public buildings are there erected in London, nay, all over the country, that have not this same feature? It would be a good speculation for a builder to mould the Grecian porticoes, and sell them ready made: it would save much time and expense. But, setting aside all banter, I have no doubt we could count scores of porticoes copied from the same Grecian authority. We will now just look at the wings. Here is novelty without thought; and a portico without any means of getting under it, except through the windows. How much better the building would have been without these additions! They are of no use whatever, and only darken the rooms opposite to which they stand; and they certainly do not enhance the dignity of the centre, but rather divert the eye from it. But the greatest fault of these porticoes is their utter uselessness. Turning round the corner to

the south end of the building, you are struck with a totally different composition. Here, the regular forms of the Athenian architecture merge into circular arches and the general characteristics of the Italian school. Had the principal front of the building been of a mixed design, the harmony of the composition would have been preserved; but, if the main features of a building partake of a certain style of architecture, the same idea should be carried through the design. An angular view of this building will convince every one of the necessity of attending to this particular; for, when the side and end are viewed at the same time, the perspective range in the horizontal lines of the windows is abruptly terminated by curves; and thus the idea of unity is destroyed.

The small Doric columns, in place of balusters, in the south end, are, in my opinion, far from being in good taste, from their association in our minds with entirely different uses. Much might have been done by an original design, with very little thought: but, to place *petit* columns in this situation, is reducing them to meaner and less meaning offices than have hitherto been assigned them.

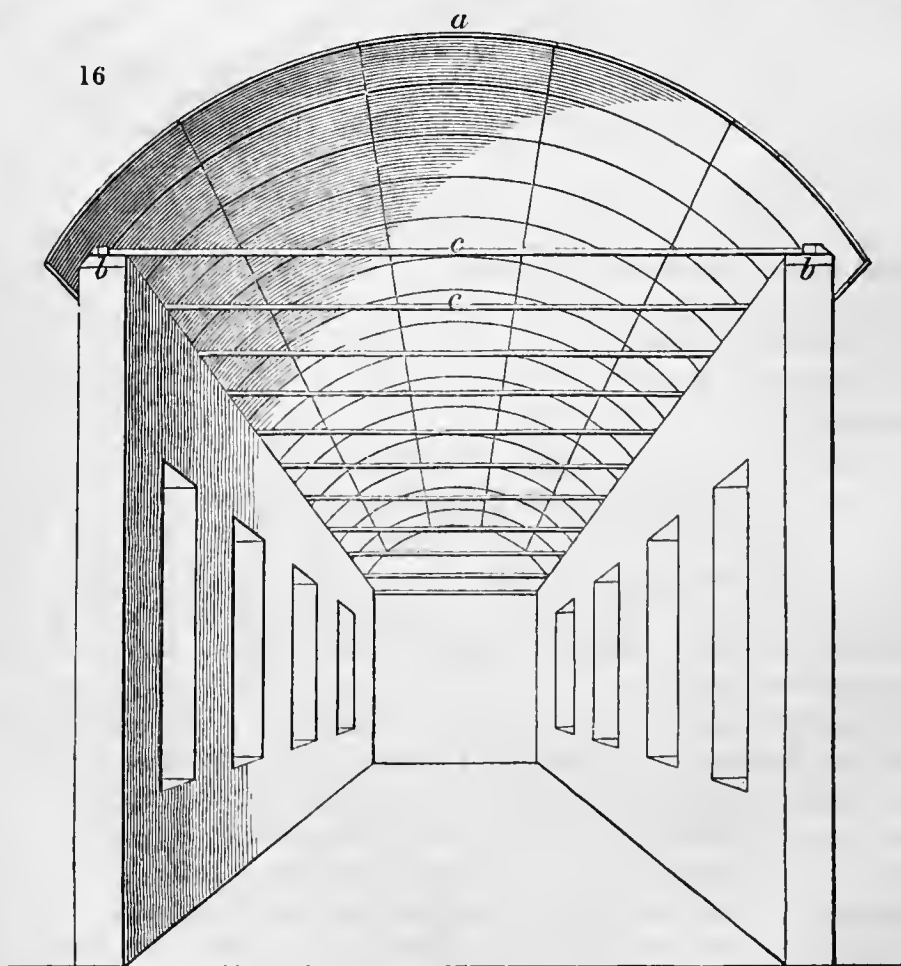
A word or two on the over-decoration of halls and staircases, compared with the other rooms of the house. All invention, all originality of thought, is generally squeezed into these places: ceilings are paneled, cornices enriched; sculpture is sought for in addition to columns; and, indeed, all *architectural* display is centred in this place. Frequently, we are pleased with the first appearance of the hall: the decorations are consistent and well arranged. This, we fancy, argues well for the living-rooms. We are ushered into the dining-room, the drawingroom, and others in succession; but no architecture here shows itself to warrant the display in the hall. A double-plinth skirting, common architraves to the doors, a cornice round the ceiling, and, perhaps, a white marble chimney-piece, elaborately carved, and purchased *ready designed*, are all the decoration we find; the wide flat ceiling without any appearance of support, the naked walls, and the general commonplace, not to say mean, appearance of these apartments displease us, after so much ostentation on entering the house. Perfect unity of design is to be obtained by preserving the same degree of decoration internally as externally: the character of the latter, in a building, should be an index to the former. The mind does not like abrupt contrasts; and deficiency in finish only shows affected display on the outside for bad economy within. A house totally unfurnished should have a character of fulness, if I may so call it, that should not depend entirely upon the upholsterer for decoration.

ART. IV. *The Corrugated Cast-Iron Roof of the Coal Depot of the London Gas-Works, Vauxhall.* By M. D.

ON visiting the estates of the London Gas Company at Vauxhall, my attention was directed to one of the coal depots there, a building of considerable dimensions, the roof of which is constructed of corrugated cast-iron plates.

This appears to me to be one of the lightest, most elegant, and, from the particulars furnished on the spot, the most economical, description of roof which has yet been used for a public building; and, therefore, I doubt not but a short account of it, with a few sketches illustrative of the principles on which it is constructed, will be found interesting to some of your professional readers.

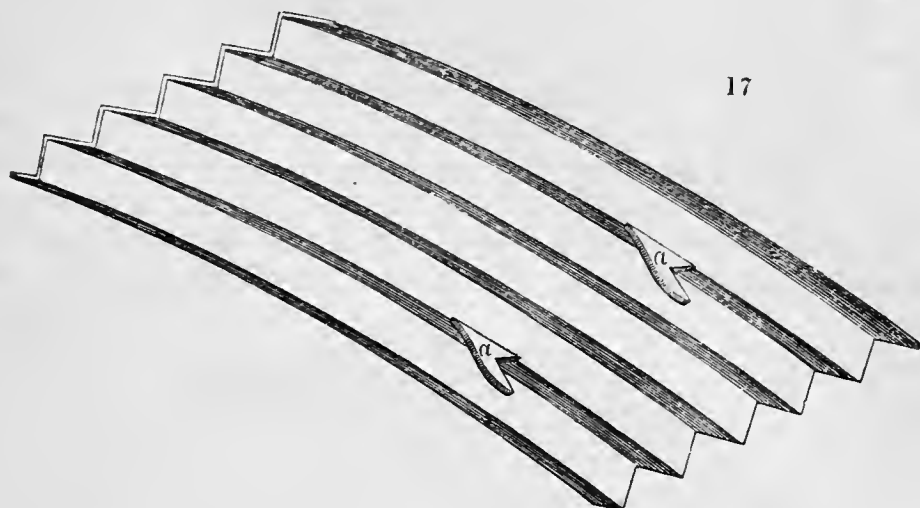
I believe that this is the only roof of the kind that has been erected, and, indeed, the first experiment which has been made



of throwing a corrugated cast-iron roof over an extensive space. It was erected at the suggestion of, and from drawings furnished by, Mr. Hutchison, the eminent engineer of the establishment, whose extensive improvements in gas machinery have rendered him so deservedly known to the public.

Fig. 16. exhibits a section and interior view of the depot, showing the roof (*a*), the wall-plates (*b b*), and the tie-rods (*c c*). The roof, which is the segment of a circle, is formed by a series of cast-iron plates, with parallel angular corrugations; five of the plates completing the arc.

Fig. 17. is an isometrical representation (viewed as an under surface) of one of the lower, or side, plates. Each of these is



cast with two small projections (*a a*), formed like the foot of a common rafter, which rests upon, and is secured to, an upright rib, raised on the centre of the wall-plate. The cast-iron plates measure 3 ft. 9 in. by 2 ft. 1 in.; and the sides of the corrugations are $3\frac{1}{2}$ in.

Fig. 18. is a transverse section of the plates, showing the



manner in which they are joined at the sides, one overlapping the other, as at *e e*.

Figs. 19, 20. are isometrical representations of the upper plates, on the lower end of each of which there is a raised band (*ff*), 3 in. deep, that overlaps the end of the next plate, which is inserted underneath this projection; that is, the end *g* of *fig. 19*. fits on the end *h* of *fig. 20*. It will be observed that, on one side of each plate, the ledge is only 2 in. instead of $3\frac{1}{2}$ in. because it is overlapped by the broader ledge of $3\frac{1}{2}$ in. on the next plate. The side *i* of *fig. 19*. overlaps the side *k* of *fig. 20*., as shown at *e e*, *fig. 18*. The plates are secured together by small iron bolts, and are made perfectly air and water tight by filling the joints with cement or putty. A coating of tar or paint is occasionally applied, in order to protect the plates with more effect from the weather.

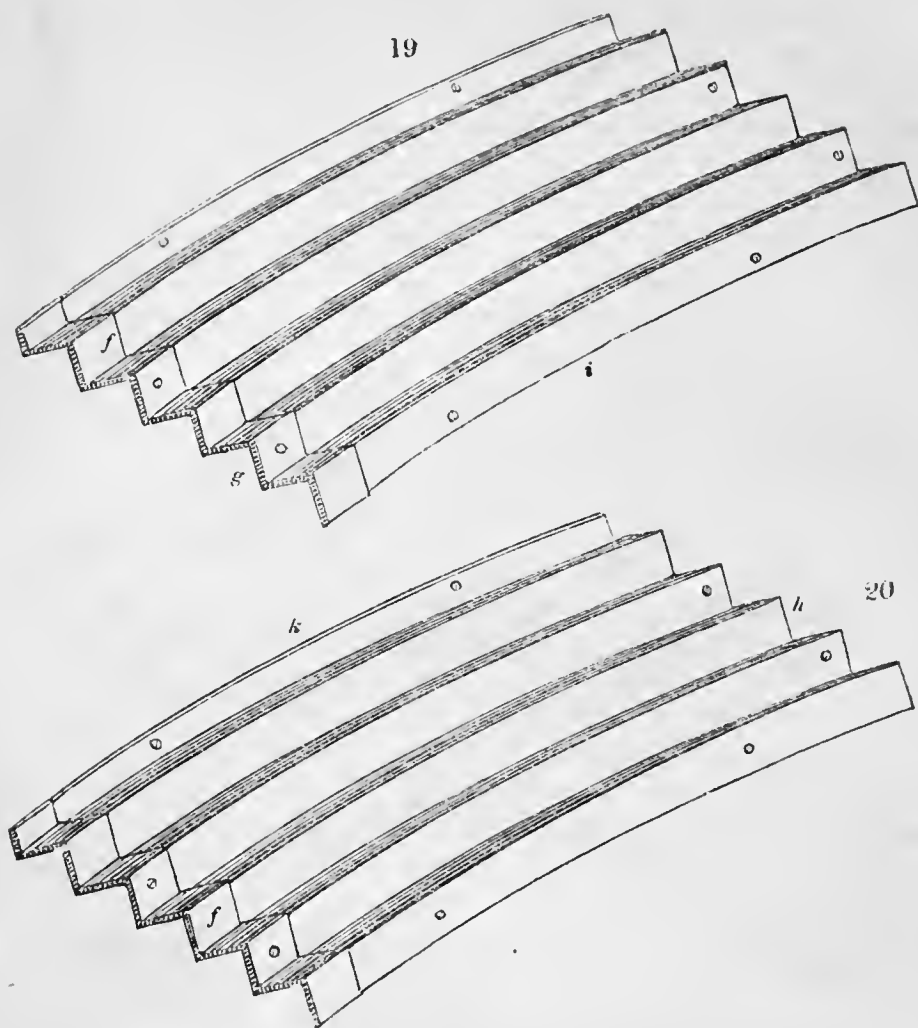


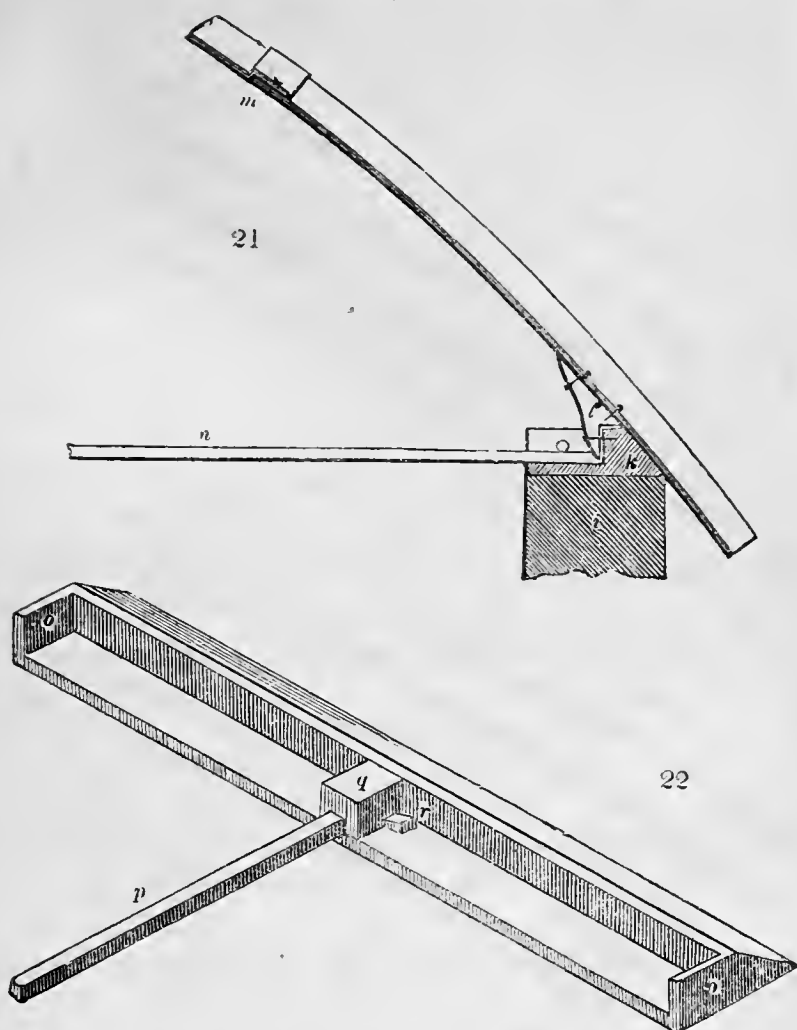
Fig. 21. is a vertical section of the plates, which shows the wall (*i*), the wall-plate (*k*), the projecting piece that rests on the wall-plate (*l*), the joining of the ends of the plates (*m*), and the tie-rod (*n*).

Fig. 22. is an isometrical representation of part of the wall-plate, which is worked into the stone or brick work on the top of the side walls. The wall-plates are in different lengths, joined by bolts at *o o*. They are kept in their proper position by tie-rods (*p*), each of which is inserted in a groove, or box (*q*), and there secured by the wedge, or key (*r*).

Each of the corrugations affords a channel for conveying the rain-water from the roof to the gutter, so that no accumulation of water can take place.

This description of roof seems to me to be well adapted to retort-houses and founderies, as it is not in any way injuriously affected by the great heat generated in those places.

It will be observed that there are neither rafters, king-bars, or lath required in this roof. It consists simply of cast-iron plates,



united by small bolts and tie-rods, as represented by the illustrative sketches.

I was informed, while examining this interesting roof, that the London Gas-Works had been visited, of late, by several eminent engineers and architects, for the purpose of seeing this improvement in the construction of roofs, and of ascertaining from Mr. Hutchison, the gentleman who built it, the practical advantages of adopting it in preference to wrought iron, slates, or tiles. I have ascertained that the average cost is 8*l.* per square yard; and, by way of illustrating the comparative expense of this and another kind of roof, I have had it from good authority, that the wrought-iron roofs of the retort-houses at Vauxhall cost each 2000*l.*; and similar buildings may now be roofed with corrugated cast iron at an expense of 800*l.* So marked a difference in the expense of constructing roofs must necessarily excite the attention of practical men, especially those who are engaged in buildings of any magnitude.

I am told that this roof has answered so well, and has given so much satisfaction, that it is Mr. Hutchison's intention to erect

one on a much larger scale next summer. It will measure, it is said, 190 ft. by 42 ft.

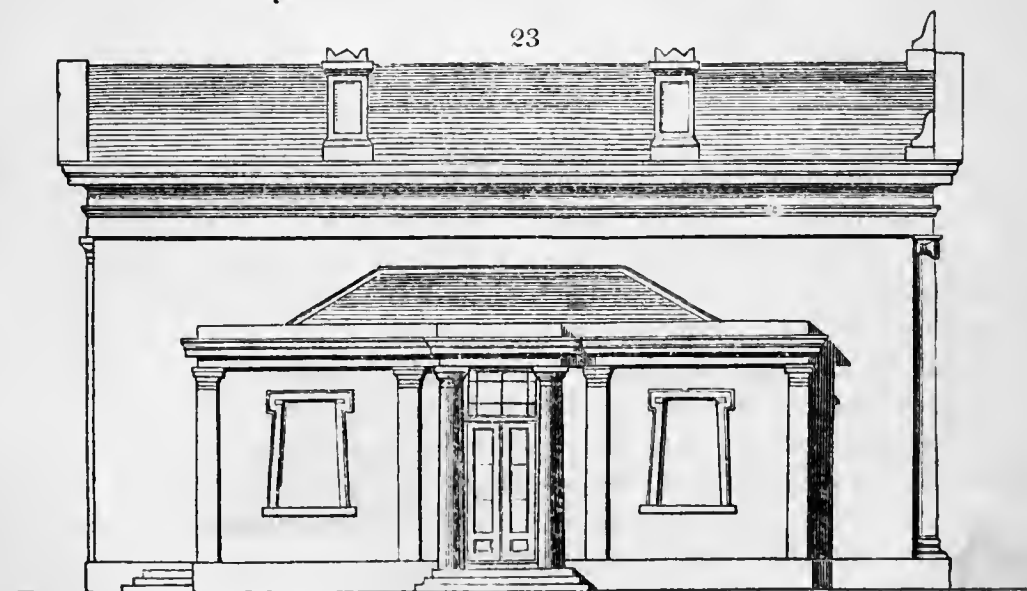
The professional gentlemen who have examined this beautiful application of cast iron have admitted it to be the most durable and most economical roof that can be constructed; and I think that it may be justly considered as one of the principal improvements of the day in the science of building; and no small degree of credit is due to the enterprising engineer who has first introduced it.

London, Oct. 12. 1837.

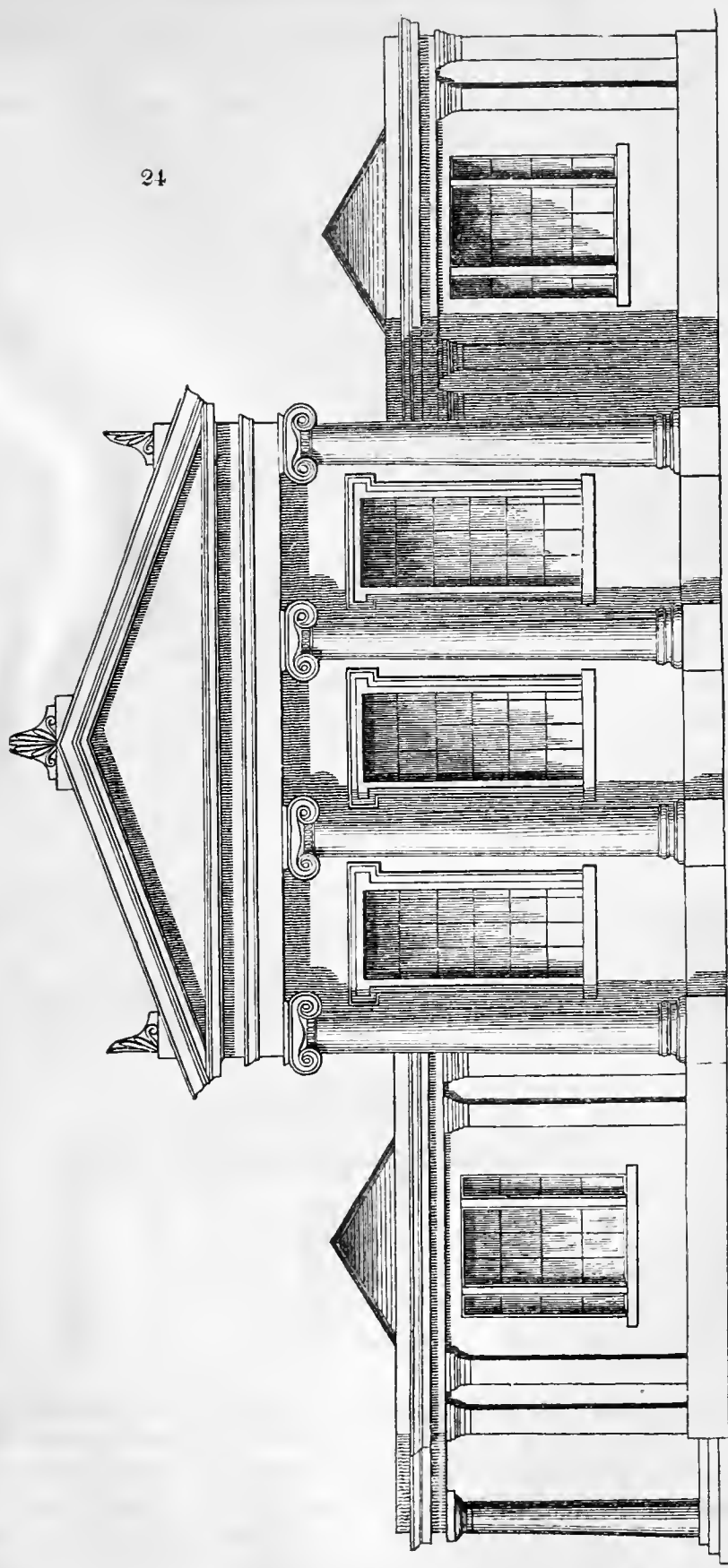
ART. V. *Design for a Proprietary School at Islington.* By JAMES EDMESTON, Architect. Communicated by FREDERICK LUSH.

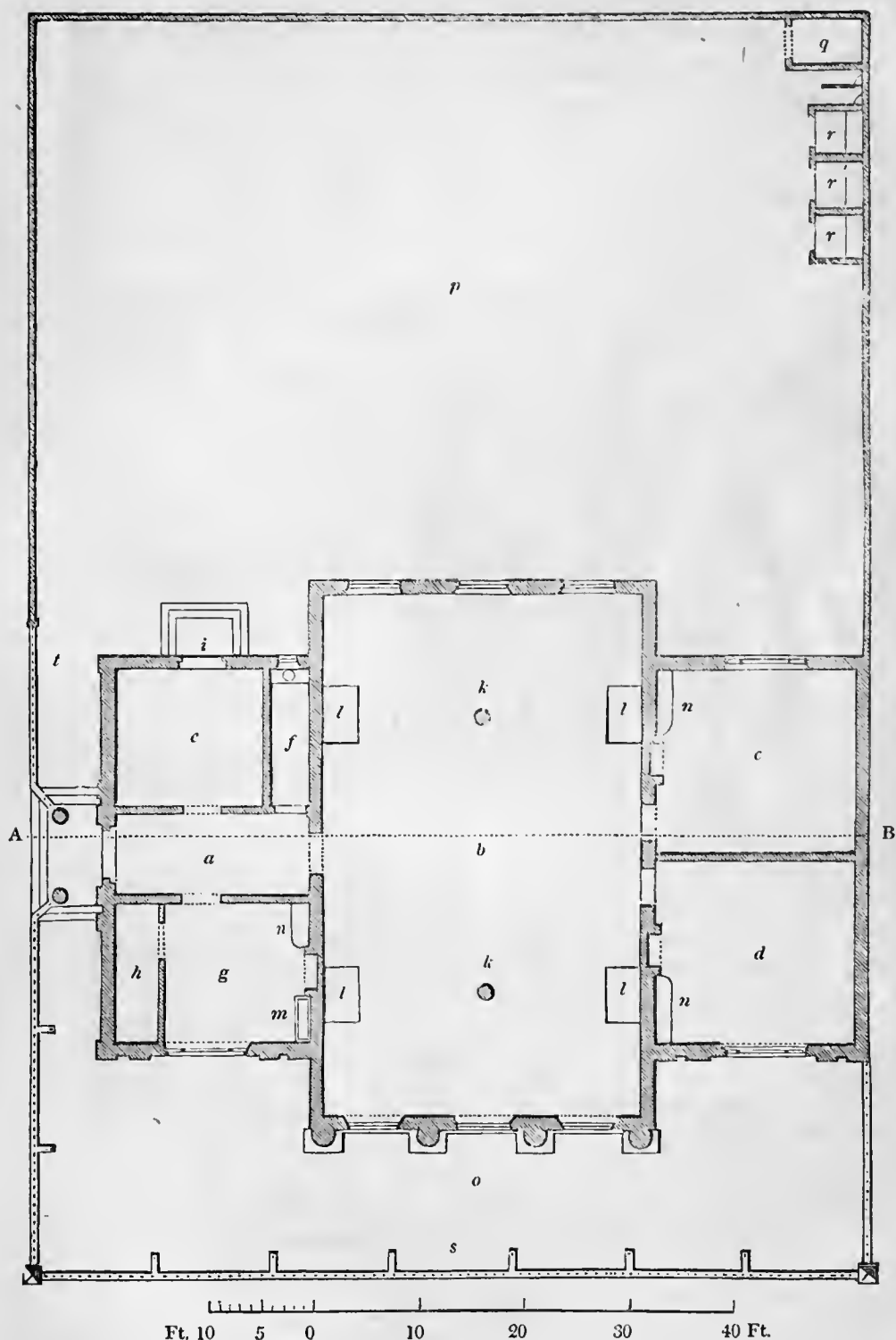
A SHORT time back, an advertisement appeared in the *Times*, announcing to architects that a premium of 20*l.* would be given for the most approved Grecian design for a proprietary school, to be erected at the southern part of Islington. The drawings (*figs. 23. to 26.*) are accurately sketched from those which were sent in among the others; but they were finally rejected, another design being adopted. I was kindly favoured with them from the portfolio of the architect, Mr. Edmeston, from whose designs and directions Hackney Grammar School was built.

23



The present design for Islington School is made to accommodate 150 boys. The architect proposed to have the school-room warmed by two gas-stoves, which would produce an equable heat, be economical in their expense, and which would avoid the necessity of flues. The windows, being constructed for the upper sash to swing upon a pivot, would afford sufficient ventilation.





The best mode of drainage was to be shown in the submitted designs; but, as it was not ascertained if there were a common sewer in the neighbourhood, and the most advantageous method would depend much upon that point, the drainage, to a certain degree, remained undetermined: a length, however, of 100 ft. of 9-inch barrel drain is considered in the estimate.

Fig. 25. is the ground plan of the building, in which *a* is the entrance hall; *b*, the school-room, 50 ft. by 30 ft.; *c*, the head master's and committee-room, 19 ft. by 17 ft. 6 in.; *d*, the assistant master's room, and apartment for drawing, French, &c., 19 ft. by 17 ft. 6 in.; *e*, a cloak and hat room, lighted by a sash door (*i*), 14 ft. by 13 ft. 6 in.; *f*, a water-closet for the masters; *g*, the porter's room, 13 ft. 6 in. by 13 ft.; *h*, a large closet for stationery, and other articles required in the school; *k k*, gas-stoves; *l l*, rostrums for the masters; *m*, sink; *n n*, closets; *o*, front garden; *p*, play-ground; *q*, coal-shed; *r r*, privies, &c.; *s*, railing in front of the principal elevation next the river, on a line with Duncan Terrace; *t*, railing next the road from High Street, Islington.

26

Fig. 24. is the front, or principal, elevation, at a scale of 11 ft. to 1 in.

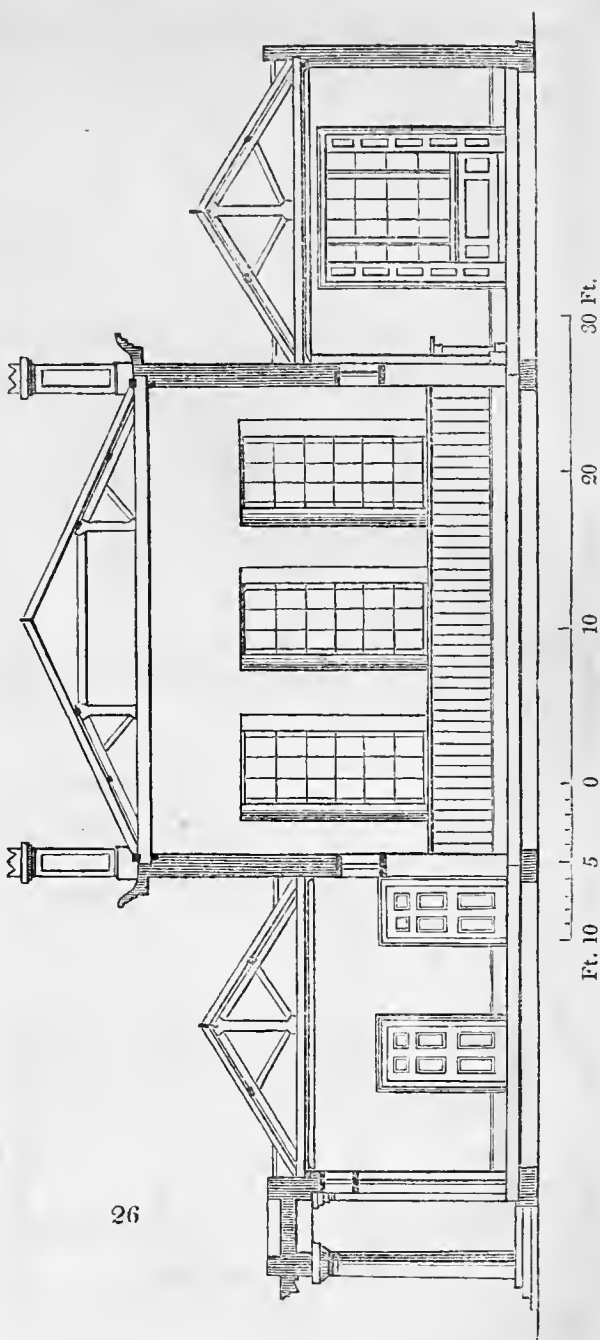
Fig. 23. is the return elevation, at a scale of 16 ft. to one inch.

Fig. 26. is a longitudinal section on the line A B on the ground plan.

The amount of the estimate is 1420*l*.

Throughout the whole of the design, there is hardly one embellishment which could be done away with, without injuring the simple but striking effect of the whole. It would have been almost impossible, in such a building, to have studied economy and effect (which are here so happily blended together) in a greater degree, without destroying its dignity of appearance, or depriving it of all pretensions to architectural character.

Charles Square, London, March, 1836.

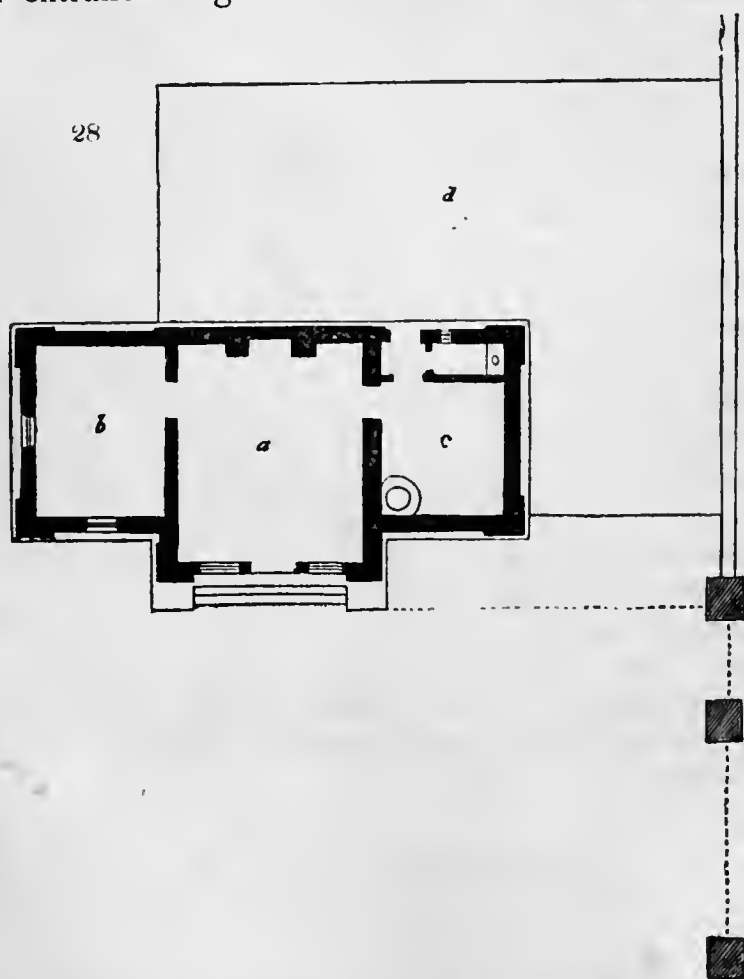


ART. VI. *A Design for a Labourer's Cottage or Gate Lodge, in the Grecian Style.* By EDWARD BRIGDEN, Architect, Bristol.

THE cottage, of which *fig. 27.* is the elevation, is designed in a manner somewhat approaching to the Grecian, or in what may be



called the pseudo or Anglo Grecian, and would be very suitable for an entrance lodge to a mansion in the Grecian style. It



would look best faced with stone; and the gate pier should be of the same material. In *fig. 28.*, which shows the ground plan, *a*

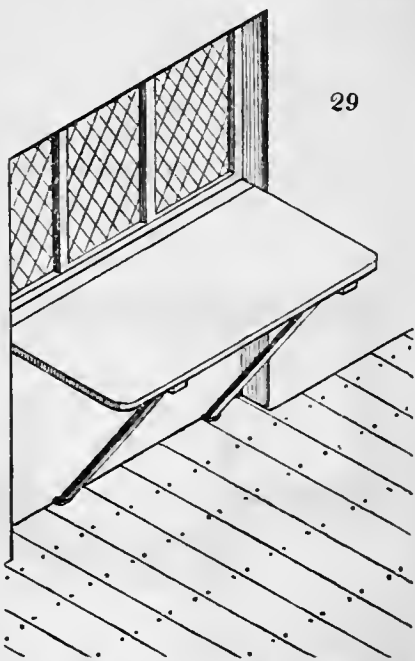
is the living-room ; *b*, the bed-room ; *c*, the washhouse, with a boiler in one corner ; and *d*, the garden. Although no fireplace is shown in the bed-room, one might easily be introduced, should it be thought requisite. In countries where stone is plentiful, I have seen the floors of cottages formed of flagstone, which looks well ; but, for comfort and warmth, wood is preferable.

Bristol, June, 1836.

ART. VII. *A temporary Table, or Ironing-Board, for small country Cottages.* By W. S.

It is a matter of some little difficulty, in small cottages for the labouring classes in the country, to place the shutters to the windows on the ground floor in such a manner as to answer the purpose, and yet be out of the way. The following plan I have adopted in some buildings of that description which have been lately erected under my superintendence.

The shutters in *fig. 29.* are hung on hinges in such a manner as to fall down into a recess below the window during the daytime ; and, consequently, are quite out of the way when not wanted for shutting up the house, or for the purposes hereafter described. The idea suggested itself to me, that shutters might be occasionally used as a temporary table or ironing-board ; and, to effect this end, two moveable bars, as supports, were let into mortises in the floor, and made to abut against similar mortises made in the ledges on the under side of the shutters. The two cornices were slightly rounded, and the upper surface was left plain, without paint. Two swing iron or wood brackets might be used instead of the two wooden bars, as they could be folded back into the recess also.



London, Oct. 1837.

REVIEWS.

ART. I. *A Treatise on Projection, &c.* By Peter Nicholson. 4to. Newcastle, 1836.

THE various works of Mr. Nicholson have acquired a celebrity which renders his name a guarantee of the value and importance of the present work. To every one who is acquainted with mechanical drawing, or who is interested in

mathematical pursuits, a mere glance at the volume will suffice to convince them how laborious but how excellent a work has been achieved, in the present instance, by the venerable and highly respected author. A descriptive title-page affords a general idea of the various objects comprehended in the volume, which are, to explain the first principles of plans and elevations, the modes of delineating solids and every form of mechanical construction, so as to present a striking image of the object to be carried into execution. The accomplishment of these is developed on entirely new principles, the nature and application of which will be best understood by a reference to the volume ; but the principal feature is, that, by means of a *directing diagram*, every line of any required projection may be at once referred to its proper place by means of a parallel ruler. The application of this figure is not only novel and ingenious, but it exceedingly simplifies the whole process of projection, and renders easy of execution what cannot be accomplished by any other means. The volume also contains a complete system of Isometrical Drawing ; and the whole is applied to Architecture, Building, Carpentry, Machinery, Ship-building, Astronomy, and Dialling. The nature of the subject requires, and has in this instance obtained, the aid of numerous illustrations, which are neatly engraved on sixty-seven copperplates, which furnish most admirable examples to the mechanical artist.

The utility of a work of this description is so evident as not to require comment. We wish, however, to direct the attention of the scientific reader to its eminent merits, and to notice the high claims which the talented author has upon the liberal patronage of the public. Scientific works, it is well known, have seldom proved beneficial to the writers ; and few have laboured more zealously, or with greater usefulness, in this department of literature, than Mr. Nicholson ; while few have been less benefited in a pecuniary point of view. At an advanced age, he yet retains that remarkable clearness of conception and aptitude of demonstration, which enable him to grasp every subject connected with his professional writings, and to develop his views in plain, simple, and conclusive language. Hence, his works have been popular to an amazing extent, and are to be found on the bookshelf of every intelligent mason and carpenter in the kingdom. Indeed, to Mr. Nicholson's writings, a large portion of the widely spread knowledge of architecture which prevails may be traced, as to a fountain head. They have had the effect of rendering this description of practical knowledge familiar, and, at the same, of placing it on the sure basis of mathematical demonstration ; or, as Mr. Nicholson's labours were happily described by Mr. Buddle at a public meeting, "he threw open the doors and windows of the workshop to the light of science, and bade it flow freely in."

Projection includes every kind of representation which is used in the practical departments of art and science. It is distinguished from Perspective, inasmuch as it is the geometrical delineation of objects by means of parallel rays, and not by converging rays. Hence, it is adapted for all those purposes where dimensions are required, or where a true delineation of the exact form of the object is requisite. As a mode of drawing, it has hitherto been much neglected ; and, even at the present time, is very imperfectly understood ; of which nothing can afford a stronger proof than the various contradictory opinions which have from time to time appeared in several London publications. The present volume, however, establishes the theory on a firm basis, and exhibits it in so clear and attractive a form, that it will, doubtless, become one of the most esteemed standard works, and find a place in the library of every scientific and mechanical student. (*Newcastle Journal. Communicated to the Architectural Magazine by the Author of the Article.*)

ART. II. *Original Geometrical Illustrations ; or the Book of Lines, Squares, Circles, Triangles, Polygons, &c. : showing an easy and scientific Analysis for increasing, decreasing, and altering any*

given Circle, Square, Triangle, Ellipsis, Parallelogram, Polygon, &c., to any other Figure containing the same Area, by plain and simple Methods, laid down agreeably to mathematical Demonstration, indispensable to Architects, Artists, Artificers, Builders, Cabinet-makers, Carpenters, Engineers (Military and Civil), Engravers, Glass-cutters, Jewellers, Machinists, Painters, Sculptors, Statuaries, &c.: containing, also, a Variety of useful Information, intended as a complete Instructor to the most useful Science of Geometry and Mensuration. By John Bennett, Engineer, Author of the "Artificer's complete Lexicon," "Labour Prices for Builders," &c. 4to, with numerous engravings on wood, and 55 copperplates. London, 1837.

THE title of this work so fully explains its contents, that we need say little more than that the body of the work fulfils the expectations raised by the title; and that it well deserves a place in the library of every working mechanic.

As the author informs us in his Preface, "the various geometrical figures are laid down with simplicity and perspicuity, suitable alike for the artisan, manufacturer, and gentleman; and, being principally drawn to the scale or size of the common two-foot rule, are thereby rendered plain to the understanding and easy of imitation."

The work consists of two parts: 1. "Geometrical Illustrations, mathematically demonstrated," which consist of a series of terms arranged alphabetically, explained verbally and by numerous woodcuts; and, 2., a series of copperplate engravings on 55 plates, with letterpress explanations.

ART. III. *A Letter to His Royal Highness the Duke of Sussex; with a Plan for the Promotion of Art, Science, and Literature, by the moderate but effectual Assistance of Government.* By Thomas L. Donaldson, Architect, Fellow and Honorary Secretary of the Royal Institute of British Architects, Corresponding Member of the Institute of France, &c. Pamph. 8vo. London, 1838.

THE ardour and enthusiasm with which Mr. Donaldson is engaged in the cause of architecture are well known; and, indeed, it is chiefly to his exertions that we are indebted for the establishment of the Institute of British Architects. We entirely agree with our correspondent, a Provincial Architect (see p. 1. of the present Volume), that the Institute of British Architects is constructed on a false foundation; and we expressed this opinion in detail, Vol. II. p. 470—472.; nevertheless, by directing public attention to the subject, and by other means, it has done much good; and, therefore, we think that it deserves that assistance from government which Mr. Donaldson suggests as desirable. After showing the very limited incomes of the Astronomical, Geographical, Asiatic, Statistical, and other Societies, as com-

pared with the good that they have done, and the large proportion of the expense which these and other Societies incur in the form of rent for apartments, Mr. Donaldson says, —

“I would therefore venture to suggest that government could afford assistance to such Associations, at once effectual and little liable to abuse, by locating them suitably; in fact, by extending to other Societies that privilege which is now peculiar to the Royal Society, Antiquarian, Geological, and Astronomical Societies, and the Royal Academy of Arts. By this means, their funds would be relieved from a material item of expense; and the fact of being in an edifice provided by government, and, as it were, carrying on their proceedings with its immediate sanction, would give them a weight and importance, which no other method could produce so effectually or so unobjectionably.

The details for carrying such an idea into execution will be found in the pamphlet itself; which, being dedicated to the Duke of Sussex, will, we trust, receive the attention of government.

ART. IV. *Blunt's Civil Engineer and Practical Machinist : Treatises on Civil Engineering, Engineer Building, Machinery, Mill-Work, Engine-Work, Iron-Founding, &c.; executed for the Use of Engineers, Iron-Masters, Manufacturers, and operative Mechanics.* By Charles John Blunt, Civil Engineer and Practical Machinist. Division B.

THE fifth number of this excellent work, designated as Division B., has at length made its appearance, nearly two years after the fourth, in which number the fifth was promised in six months.

Sincerely wishing well to this most useful and splendid undertaking, we cannot but lament that it should profess to be published periodically, and yet fail to keep time in any one number. This irregularity must have an injurious effect on the sale. Many valuable and interesting periodicals have failed from this cause alone. It is, therefore, well not to fix a time, except the power of keeping it be clearly ascertained.

It does not appear why the numerical designation has been superseded by the literal. We think there should have been a reason assigned for subjecting those readers who delight in chronological order, to the trouble of examining the dates on the engravings, as the only means afforded for settling the succession of the divisions.

But we have done with complaint; and we hope our intimations will be received in the same spirit of kindness which has dictated them. We feel much pleasure in adding to the favourable opinion already given of the work in Vol. I. p. 237., that the latter divisions are rendered much more interesting to the general reader, and more useful to the professional one, by the observations and specifications given in addition to the dry referential descriptions which alone constituted the letterpress of the early numbers.

Of the accuracy of the engravings, and clearness and abundance of the details, we cannot speak too highly. Mr. Blunt has done himself great honour by this exhibition of his skill and industry; and we hope he will be amply rewarded by an extensive sale. No engineer, iron-master, or manufacturer, ought to be without this inestimable work; and it would be an interesting addition to the library of every gentleman, more particularly such as delight in encouraging the advancement of practical science.

Although we cannot hope that any great proportion of the operative mechanics will avail themselves of the valuable information to be obtained from this publication, yet there are, no doubt, many whose prudential management of their moderate incomes affords a surplus sufficient for the purchase, who would thus outlay part of that surplus, were they informed of the existence of such a work.

The following outline of the contents of the five divisions already published will corroborate our encomiums.

No. I. Division 1.—*Boulton and Watt's Portable Steam-Engine, in twelve super-royal and folio plates.*

Plate 1. A general view of the entire engine. 2. The beam in detail, beam-carriage, gudgeons, &c. 3. The parallel motion. 4. The entire detail of the steam cylinder and piston. 5. The hot and cold-water pumps, in detail. 6. General plan of the engine. 7. The slide valves, and their casing. 8. The casing of the slide valve. 9. The eccentric rod and camb. 10. The governor in detail. 11. and 12. The engine framing.

No. II. Division 2. — *Marine Steam-Engines, Steam Corn-Mills, &c., complete in ten super-royal and folio plates.*

Plate 1. General plan of a pair of 40-horse marine engines. 2. A general transverse section of the two engines, the vessel, &c. 3. A general side elevation of the larboard engine. 4. A steam corn-mill. 5. Section of the steam corn-mill. 6, 7, 8, 9, 10. Details of the steam corn-mill.

No. III. Division 3. — *Horizontal and vertical Sugar-Mills, Forges, Mill and Forge Hammers, &c., complete in ten super-royal and folio plates.*

Plate 1. Horizontal and vertical sugar-mills. 2. A steam corn-mill, by Maudslay. 3, 4, 5. Details of the same. 6, 7, 8. The Kent and Surrey sewers, Duffield sluice. 9. The great tilt, or mill and forge, hammers. 10. Charles Manby's smith's forge, in use in the iron-works of Beaufort, Abergavenny.

No. IV. Division A. — *Sea Entrance-Gates, Swing Bridges, Canal Bridge of the Gloucester and Berkeley Canal, Water Wheels, and Iron Roofs. By the late Thomas Telford, Esq., C.E. F.R.S., &c. Plans, Sections, and Machinery of the Weymiss Colliery, complete in ten super-royal and folio plates.*

Plate 1. The Gloucester and Berkeley Canal. 2, 3, 10. An underdip colliery, now working under the Firth of Forth at Weymiss. 4. Extract of a report of the late John Hughes, Esq., on dredging, and the carrier and delivery barge. 5. Original specification of the swing bridges on the Gloucester and Berkeley Canal. 6. Details of the bridges. 7, 8. Description and references of a breast water-wheel and machinery. 9. Plan of the water-wheel. 10. A cast-iron roof, with details.

No. V. Division B.

Plates 1, 2. London and Birmingham railway, Lawley Street viaduct. 3. The Bogie locomotive engine. 4. The Hercules locomotive engine, on the Newcastle and Carlisle railway. 5, 6. London and Birmingham railway goods waggon. 7, 8. Details of the goods waggon, wheels, carriages, &c. 9. Elevation and end view of a tender, as employed on the London and Birmingham railway. 10. The Great Western Railway Bridge, or Viaduct, over the River Thames, at Maidenhead.

The sizes of the plates vary from 24 in. by 9 in. to 44 in. by 19 in. — *J. I. H.*

ART. V. *A Glossary of Terms used in Grecian, Roman, Italian, and Gothic Architecture.* The second edition, enlarged. Exemplified by 400 woodcuts. 8vo, pp. 144. London, 1838.

THIS is a new and very much improved edition of a work bearing the same title, reviewed by a correspondent in our Fourth Volume, p. 249. The present edition is so greatly enlarged, and so amply illustrated by beautiful engravings on wood, that it might well pass for a new work. Of all the architectural glossaries which we have seen, this is decidedly the one which we should recommend to the general reader, or to ladies desirous of obtaining a knowledge of architecture. With such a volume as a companion, the interest excited by all buildings whatever, and more especially by churches, public buildings, ruins, and antiquities, will be greatly increased; and, as we should wish to diffuse a knowledge of, and a taste for, architecture among all classes, we cannot too strongly recommend this volume. If it were to be generally studied by ladies, it would effect for them, with regard to architecture, what Dr. Lindley's *Ladies' Botany* has done with regard to plants.

In order that those who possess the first edition may have some idea of the improvements made in the second, we think it but justice to copy a portion of the Preface.

“ The rapid sale of this work clearly shows that something of the kind was required, and has encouraged the publishers to incur a large additional expense, in order to render it more worthy of the approbation of the public. While gratefully acknowledging the favourable reception it has met with, they are far from being blind to its deficiencies, and have endeavoured, in the present edition, to remedy them. The objections made to the work were, that it was too concise, and much too confined to Gothic architecture, especially in the illustrations. The first arose from an anxiety to avoid the opposite extreme, as it is obviously easier to extend such a work than to confine it within prescribed limits; the second, from the nature of the work, the chief object of which is the illustration of the Gothic styles: but in the present edition the Grecian capitals, mouldings, &c., are given. The series of examples of the different portions of Gothic architecture, is also rendered much more complete than before; and the addition of the ascertained or presumed date to each will, it is hoped, prove convenient and useful. As this is the first attempt of the kind, much indulgence may fairly be asked, and a few errors may be expected to have crept in, some

of which are corrected in the errata: the suggestions of Matthew Bloxam, Esq., of Rugby, as to the presumed dates of many of the examples, have been followed, and his remarks and corrections are appended to this Preface.

"At the suggestion of Professor Whewell of Cambridge, some attempt has been made to quote authorities, and thereby to distinguish between terms of long-established usage and those recently introduced: with the kind assistance of Mr. Willis, the latter object has in all cases been effected; but in other instances it did not appear necessary to quote any authority. The Compiler feels bound to acknowledge the great obligations he is under to Professor Whewell and to Mr. Willis, for their advice and assistance, and for the liberal manner in which they allowed him to make extracts from their useful and interesting works: he has also to express his obligations to J. Corne, Esq., for the use of a manuscript glossary, by John Carter, in the handwriting of the late Alexander Chalmers, and apparently compiled by him from Carter's papers in the *Gentleman's Magazine*." (p. vi.)

ART. VI. *Practical Observations on the Asphaltic Mastic, or Cement of Seyssel, now extensively employed on the Continent, for Pavements, Roofing, and Flooring, for Hydraulic Works, &c.; explaining its Nature and Manipulation, &c.* By F. W. Simms, Civil Engineer, late of the Royal Observatory; Author of a "Treatise on the principal Mathematical Instruments employed in Surveying, Levelling, and Astronomy, &c." 8vo, 27 pages. London. Price 1s.

THIS is a work which will be perused with intense interest by architects, builders, and paviors, as it bids fair to introduce some important improvements in buildings of every description, water-works, and pavements. It is a gratifying proof of the alacrity with which new inventions are enquired into in the present day, that the asphaltic mastic, of which nothing was known in England two months ago, but what was contained in a newspaper paragraph, or, perhaps, in the letters of Englishmen at Paris to their friends at home (an extract from one of which letters we published, p. 45.), is already described in detail, accompanied by its history, chemical properties, and various applications, in a work published in London.

Mr. Simms's account of the asphaltic mastic is drawn up with the greatest perspicuity, and supported by documents of undoubted authority; and the following extracts, while they prove this, will put the general reader in possession of all that he can desire to know on the subject. To the professional man, the work itself is essential.

"The ancients were indebted for the preservation of their buildings to the choice of their materials, and particularly to the use of cements, which, perfectly uniting with metal, stone, or wood, rendered their structures firm and solid. Amongst others, the use of a bituminous cement appears to have been extensive from the earliest times. Historians inform us, and modern observation confirms their statements, that the bricks with which the walls of Babylon were constructed were cemented together with hot bitumen. And in the destruction of some ancient remains of fortifications, supposed to have been Roman, near Pyrimont, about forty years ago, the stones appear to have been similarly ce-

mented; and so great was its tenacity, that the works were with great difficulty pulled down, and not without the use of gunpowder. This circumstance led to a singular and important discovery, for the fact of which, as follows, we are indebted to a gentleman named Perrigny, a native of that neighbourhood. During the removal of the above ancient remains, it was observed that the cement bore a great resemblance to the asphaltic mass or mountain in the park of Pymont, about five miles north of Seyssel. This led several persons present to think of making a similar application of it; amongst others was a relative of M. Perrigny, whose dwelling on the banks of the Rhone was so very damp, that the lower part could not be appropriated to any use whatever. This person considered that its application might succeed in keeping out the wet, every other remedy that he had tried having failed. The experiment was, accordingly, made, and succeeded beyond his most sanguine expectations. This circumstance, among other early trials of its properties, speedily led to its very general adoption in that vicinity, where the working of this material has become of great importance, and where the presence of the bituminous asphalte is so great as to appear almost inexhaustible; and, although but recently worked to any great extent, yet its properties as a cement appear to have been long known. It already constitutes the chief wealth of the country, which was previously half wild.

"In various parts of the eastern chain of the Jura mountains, there are bituminous veins of greater or less extent; but the only place at present known where the asphaltic rock is to be found is at Pymont, above named, in the department de l'Ain. In this immediate vicinity is also obtained a peculiar kind of mineral pitch, there called bitumen, which, upon being mixed in certain proportions with the asphalte, forms the mastic, or cement, of which it is our business to treat, and which, in France, after years of struggling with prejudices, and the opposition of parties interested in its failure, is obtaining so large a share of patronage as to be extensively employed both in the public and private works of that kingdom.

"For many years after the discovery of the valuable properties of the asphalte, the mine at Pymont was the property of a company of Swiss merchants; but, from their defects of management, and from the limited extent of their finances, their operations were confined within very narrow bounds; and, at length languishing, the properties of the mastic were likely to have become lost to society. It, however, passed into other hands, among whom we find the English name of Taylor, and also of Mr. Equem, a gentleman who has persevered against all opposition in calling the attention of the French engineers and architects to the subject; and, having executed a variety of works with unvaried success, has secured for it a rapidly advancing popularity in France, where we have lately had an opportunity of professionally examining and acquainting ourselves, not only with its nature, but also with its manipulation.

"The business has now fallen into the hands of a private company at Paris, who, with a capital of 30,000*l.*, purchased the mine at Pymont, and are carrying on an extensive trade in its manufacture, with Mr. Equem at the head of the executive department.

"The asphaltic mastic of Seyssel, when prepared for use, is, as before observed, a compound of two mineral substances; one is the native asphalte, the other is bitumen; the proportion of the former in the amalgam is 93 centimes, and of the latter 7 centimes. The asphalte is extracted from the mine in blocks, and reduced to an almost impalpable powder before it is mixed with the bitumen. The latter, as extracted from the mine, is first broken into pieces of about the size of an egg; these are put into boiling water, and the particles which rise to the surface are purified by boiling for 24 hours: the result is, the bitumen to be mixed with the pulverised asphalte. The combination of these two substances forms the mastic or cement, which, being reduced to a fluid state by the application of caloric, is poured into moulds of any shape required; or, in this state, used as cement in hydraulic works, &c. The use of the bitumen appears to be the giving of ductility to the mastic; and, if a

very minute quantity of sulphur be added, the mastic will become hard, and partially brittle.

“In France, where, with the exception, we believe, of Belgium, this mastic has, at present, only been employed, attempts have been made to imitate it; but in these fictitious compounds substances have been introduced instead of asphalt, which absorb from 40 to 50 per cent of bitumen, forming a composition which the heat of the sun will melt, and which cracks when exposed to the cold of winter. In other instances, matter has been substituted which, having no affinity whatever for bitumen, disintegrates with time. When in Paris, we had an opportunity of making a fair comparison between the genuine and the fictitious materials. In the abattoir of Montmartre, one of the great public slaughter-houses of Paris, a part has been laid down with the mastic of asphalt, and another part with the fictitious mastic, both as substitutes for flag-stone pavement; for this purpose, perhaps a more severe test of their respective merits could not have been found, being exposed to the tramping of men and cattle, the dying struggles of the latter, with the blood and water with which it is constantly deluged. The flag-stone pavement hitherto used required frequent repairs and renewal; yet so great are the tenacity and hardness of the genuine mastic, that, although it had been thus in use for many months, it appeared as if it was new; whilst, on the other hand, the fictitious mastic had worn so much in holes as very much to resemble a honeycomb; and these holes being filled with blood and filth, presented to an unaccustomed eye a very disagreeable sight.

“The genuine mastic possesses the hardness of stone, and yet preserves a certain elasticity. When used as pavement for terraces or footpaths, it appears to resist the wear equally well with granite; and, when prepared in the manner now adopted in Paris, it is difficult to distinguish it in such situations from that stone. One of the finest specimens of paving that ever came under our notice, and which, at first sight, we mistook for granite, is that on the north side of the palace and gardens of the Tuilleries: it is about 1100 yards in length, and 10 ft. wide; it is composed of the asphaltic mastic; and the joints, which transversely cross it the whole breadth, and which at present appear to divide the pavement into a number of large equally sized slabs, are disappearing, by the mastic becoming more dense from the tramping of feet; so that this extensive piece of pavement will soon appear, from end to end, like one immense sheet of stone.

“A few minutes after the mastic has been spread in a fluid state, it again takes its natural density, which is such, that, at the heat of 30° Réaumur (equal to 100° of Fahrenheit), it resists all impressions from an ordinary force. Its extensive application to the covering of buildings, instead of tiles, slate, or lead, has induced the trial of experiments in France, by which it was ascertained that it is anti-electric, a property which it is desirable that all bodies should possess that are employed in roofing. Its application, also, for the flooring of halls, passages, and apartments is in no way dangerous on account of fire, as it is not inflammable, the quantity of pitch which it contains being so very small. For the floors of underground kitchens, &c., it is particularly applicable, it being warm, and keeps out all damp, as well as vermin and insects, which are frequently so abundant in such places. When employed in the construction of water-tanks or reservoirs, it imparts neither taste, smell, nor colour to the water it contains.”

Having thus stated, generally, that, with possessing the durability of the hardest stone, it is wholly impervious to moisture, while it possesses the advantage of almost indefinite extension; or, where joints cannot be avoided, of being so closed as to present a continuous surface; Mr. Simms next produces his documentary evidence. This consists of letters from French

architects, engineers, &c., stating the uses which they have made of the cement: the details of four experiments made to prove its strength and durability: a quotation from Buffon, in which he says, "Thirty-six years ago, I caused to be plastered over with asphalt a large basin in the garden of Natural History, which ever since has been perfectly retentive of water:" instances in which asphalt has been substituted for flag-stone pavement: on the application of asphalt to roofing: reference to certificates of military engineers, and twenty-two of the principal architects of France, dated as far back as 1827, as to its use in hydraulic constructions for roofs and terraces: instances of the application of asphalt to flooring, &c. The retail prices of the asphalt, both in its native and manufactured states, as charged by the company at Paris, are next given; by which it appears that foot pavement costs about $6\frac{1}{2}d.$, and roofs $8\frac{1}{2}d.$, per square foot. A comparative view of prices of slate, lead, &c., is added; after which follows a geological account of the mine of asphalt at Pyrimont, from the *Bulletin de la Société Géologique de France*. An appendix contains the opinions of Lords Elgin and Lincoln, and Sir John Hay, Bart., dated Paris, Nov. 23. 1837.

No material promises to be so well adapted for realising our idea of a narrow strip of flag-stone, or an equivalent to that, along the centre of all the footways in the neighbourhood of towns, to a distance from towns varying according to their extent and population. Substitutes for gravel walks, in gardens having steep surfaces, may also be made of it; and, indeed, for the walks of kitchen-gardens, and for all street-gardens, it will probably be found superior to every thing else.

MISCELLANEOUS INTELLIGENCE.

ART. I. General Notices:

HARPER and Joyce's new Stove and improved Fuel.—In our preceding Number, p. 46., while noticing an American stove that produced no smoke, we referred to an account which we had given of Joyce's self-consuming stove in a contemporary Number of the *Gardener's Magazine*. In that account, we stated that we had seen the stove in action for several hours, on December 5., in the Horticultural Society's meeting-room, in Regent Street. We stated that the stove was remarkable in several respects: 1. In producing no smoke or offensive vapour or odour of any kind; 2. In the extreme cheapness and immense heating power of the fuel employed, a pound or two of the material (which does not cost above one halfpenny per pound) serving to keep up a sufficient temperature, in a moderate-sized room, for 20 hours; 3. In its requiring very little labour, the charge being put in at periods of from 15 to 30 hours apart, and no attention whatever being required in the intermediate space; 4. In its perfect freedom from dust, and in no noise being required to keep the fuel burning, as in stoves which require the use of the tongs, poker, &c.; 5. In its comparatively perfect security from accidents by fire, no part of the flame or ignited fuel being visible. This may be enough to give some idea of the invention, the great excellence of which consists in saving every par-

title of heat produced by the fuel, as in the case of burning charcoal in the middle of a room; but without producing any of the offensive or deleterious vapours which arise from charcoal, and the other fuels in common use, when so consumed.

Since our article appeared in the *Gardener's Magazine*, the inventor, Mr. Joyce, a gardener at Camberwell, has taken out a patent "for an improved apparatus for heating churches, warehouses, shops, factories, hot-houses, carriages, and other places requiring artificial heat, and improved fuel to be used therewith. Sealed December 16." The specification to be given in within 6 months. (*Repert. of Patent Inventions*, Jan., 1838, p. 62.) A partnership has been formed between Mr. Joyce and Mr. Harper, and the stove has lately been exhibited privately to some friends and scientific men at the Jerusalem Coffee-House, Cornhill. We may remark here, as a singular fact, that this patent was opposed by an individual who appears to have thought that he had made the same or a similar invention. He obtained an injunction, but that was shortly afterwards dissolved. Scarcely any thing was said respecting this mode of heating in the daily, weekly, or monthly journals (except the *Gardener's Magazine*), that we are aware of, till January 13.; when the *Mechanic's Magazine* and the *Literary Gazette* contained each a short article on the subject, of which the following is the essence:—

Joyce's new stove "is in the form of a tall urn, having a pipe running entirely through the centre, with a cap, or valve, at the top, to regulate the draught. The urn is of thin bronze, about 2 ft. high, and 8 in. in diameter. By the combustion of the fuel inside, the metal continues at a dull red heat, and so gives off the caloric to the surrounding air. The fuel is stated to be a vegetable substance, and one charge in a stove of the above-described dimensions will burn for 30 hours, and will cost sixpence. No smoke or effluvia are produced." (*Mech. Mag.*, Jan. 13. 1838.)

"*The new Mode of Heating Rooms, &c.*—The puzzle which has been shown at the Jerusalem Coffee-House has set the wits of conjecturers at work upon the nature of the particular fuel which, at so cheap a cost as one farthing an hour, is to warm a room. Of these conjectures we have heard two: the first is, that the gardener who discovered the fuel, which enabled him to keep up the fire whilst he slept, must have used old tanner's bark, as it was the only fuel accessible in a hot-house; the other is, that charcoal is the base, and lime employed to absorb the carbonic acid gas. Gipsies are in the habit of using the ashes of their fires, raked together in a heap, and sprinkled with lime. This will burn throughout the night, and give out much heat, and no deteriorating gas is evolved to distress the sleepers in the gipsy tent." (*Lit. Gaz.*, Jan. 13. 1838.)

Whatever may be the fuel employed, the invention, unless some objection be discovered to it, which has not yet been foreseen, will prove an immense source of economy, in money and in labour, to all those nations throughout the world who are obliged to heat artificially the apartments in which they live. As we have said in the *Gardener's Magazine*, this invention promises to hold the same rank in domestic economy (that is, the art of house-keeping), as the invention of gunpowder does in the art of war.

New Material to be applied to Dwelling-houses, to render them capable of resisting Fire.—About the middle of November, 1837, the scientific world was somewhat startled by observing, in the newspapers, an announcement that a discovery had been made and perfected, of a material to be applied to dwelling-houses, capable of entirely resisting the action of fire; that an experiment was to be made to prove its efficacy, at White Conduit House, Nov. 25. 1837; and that the presence of all parties concerned was requested to view the exhibition. It might have been supposed that the answer to this appeal would have been universal; and, as parties generally attend where there is nothing to pay, and they really are interested, that half London would have been present on the occasion. But, unfortunately, John Bull has had "Wolf!" shouted to him so often of late, mighty discoveries have turned out "such fantastic tricks,"

that he has grown very sceptical indeed. There was, however, a tolerably numerous party collected at White Conduit House on the day of experiment; some, of course, interested in its success; others, perhaps, equally so in its downfall. The material is, in appearance, a cement, and, like it, may be applied with the trowel, or with a brush in the manner of paint. Mr. Dewitte, the inventor of this composition, considers that it should be applied to the timber of a house while building, about a quarter of an inch thick; or it may be employed instead of the common plaster now in use, as it can be worked with equal facility, and polished and painted the same. Sufficient quantity has not yet been prepared to form any certain estimate of the expense; but he considers that the cost of preparing the whole of the timbers of an 8- or 10-roomed house would not exceed 30*l.* or 40*l.* For the experiment, two little wooden houses had been constructed; the one prepared interiorly, with the exterior just washed over, to show the nature of the composition, and the other left in its natural state. These were filled with shavings and fired: the one not prepared was, of course, immediately one mass of flame; while the other resisted every effort to ignite it. It was delightful, at this moment, to watch the disappointment of the oppositionists, who afterwards took an unfair advantage of a neglect on the part of the proprietors. When the burning mass of the unprepared house was at its greatest heat, they busied themselves to turn it round close upon the other building, though Mr. Dewitte assured them that the exterior of the building was not prepared. After some time, it began to burn, and they gloried in their triumph, until the one building, having burnt itself out, dropped to the ground, and discovered the side of the other partially burnt away, but with the inside coating and the rest of the building as perfect and unharmed as if it had never been touched, notwithstanding the furnace heat that had been applied to both sides of it. The persons assembled, among whom were Mr. Barry, and other eminent architects and scientific people, declared themselves perfectly satisfied of the complete success of the material: the only hope expressed was to see the experiment tried on a larger scale, when the proprietors shall be better prepared for it. Convinced of its perfect efficacy and value, I only trust that they will immediately set about preparing a more extensive trial, to prove to those who were so anxious to throw cold water on the invention, that it is of no more use in stopping their progress, than it would be in stopping the progress of the flames when we shall enjoy the security of having our houses prepared with their composition. — *A. December, 1837.*

Hydrostatic Measurement of Timber. — In the West India Docks, mahogany logs are weighed in a crane; and their weight marked on one end. Now, it would be practicable also to measure these logs at the same moment that they are weighed: I mean, taking their solid contents. Thus, suppose a log weighs 25 cwt. 1 qr. 14 lb.: it would be, when reduced, 25·375 cwt. Then, as the cubic foot of fresh water is 62½ lb. weight, we have only to multiply the specific gravity of mahogany by 62½, and we find the weight of a foot of mahogany to be 66½ lb. nearly. With this as a divisor, and the 25·375 cwt. reduced to lbs.

$$\begin{array}{r} \text{making } 2842\cdot000 \text{ as a dividend,} \\ 2842 \\ \text{we have } \frac{\quad}{66\cdot5} = 41 \text{ feet odd.} \end{array}$$

Thus we see how, by means of water, of which the mahogany is a palpable form, we can measure the products of water.

The only difficulty in obtaining by this means a compound weighing and measuring crane is, that we cannot find two pieces of the same wood, or wood of the same name, of the same specific gravity. If all oak, all fir, all ash, all teak, all mahogany, were of the same specific gravity, we should have a constant multiplier for each sort of wood; and then, by the simple operations of multiplication and division, we could accomplish our purpose. The rule, in words, is: Multiply the specific gravity of the wood, whatever it be, by 62½; and the produce will be the weight of a cubic foot. Then divide

the weight of the log or stick in pounds avoirdupoise, by the weight of its cubic foot; and the quotient will be the solid contents in feet of the stick. — *A. J. Jan. 1. 1838.*

ART. II. *Domestic Notices.*

ENGLAND.

LIGHTING the House of Commons. — On Friday evening, January 5., Lord Duncannon, Mr. Baring, and several other members of parliament, attended in the House of Commons for the purpose of observing the result of a new plan, proposed to the committee by Dr. Reid, for lighting the house with gas. In the lobby were stationed two engines and a strong body of firemen, in readiness to operate upon any part of the house, in case of accident from any outbreak of flame. Between the benches of the galleries were also stationed men, with buckets of water, for the protection of the roof, to which the experiment was almost exclusively confined. Three lines of tubes were laid down upon an inclined plane, immediately under the slopes of the roof, and over those windows in each side of the ceiling from which, in the daytime, the light descends. Behind the row of panes of glass, in the wall over the door opening into the reporters' gallery, was placed a single tube. There were no tubes at the other end of the house. A few minutes after four o'clock, the main cocks, which are all on the Abbey side, were turned, and three lines of strong illumination shot down light on the floor from the roof, and one line from the reporters' gallery. In the former, the flames issued in oval jets, about an inch in length, and a quarter of an inch asunder, not less than 1500 in a row, and incessantly flickering. From the single tube at the reporters' gallery, each flame issued in a triple jet. The view had a dazzling effect from the floor; and the light, without being in the least distressing to those who stood beneath, enabled one to read the smallest print with ease. No smell whatever was perceptible, the carbon not being permitted to come below the glass.

The object of the proposed use of gas (the effluvium being prevented from descending, as already stated) is to discontinue the burning of wax candles in the chandeliers; and thus, by saving a quantity of air hitherto carbonified, for the respiration of persons within the area, to give greater efficacy to Dr. Reid's plan of ventilation, which has not been as yet carried out. To promote this plan, the number of holes in the floor are now being doubled. Through these the air ascends very densely when the carpeting is off the floor: it rushes in at the doors with the force of a gale; but it is said that, if a man were to stand near the valve of the shaft over the ceiling, the current of air would blow him over. The expense of gas is calculated at nearly 30*l.* a night; that of candles, at not more than 5*l.* Mr. Wakley, who was in the House, said the gas burned, in the chambers above the ceiling, at a temperature of 130°, drying up the lath and plaster, and all adjacent combustible matter on the roof; so that the fabric would, from the slightest accidental creation of flame, take fire, and burn like touchwood. In his opinion, the glass in the windows would crack before ten hours. (*Times*, January 6. 1838.)

Ventilation of the House of Commons. — Several noblemen and gentlemen were present, on the evening of December 30., in the House of Commons, to witness certain experiments made by Dr. Reid with reference to the ventilation and lighting of that house. In consequence of the complaints made upon this subject during the present session, the attention of Dr. Reid was called to it; and, accordingly, that gentleman came to town from Edinburgh to enquire into the causes of the inconveniences of which the members had complained. It would be difficult to furnish our readers with an idea of the precise method adopted for diffusing and equalising the progress of the air from the lower chambers of the House of Commons; and to explain the precautions by which Dr. Reid considered it necessary to give complete effect to his plan. It is sufficient to observe, that the complaints had reference to the dryness of

the atmosphere, and the quantity of dust which was stated to have risen from the floor of the house, and to be inhaled by the members. In order to prevent the first of these inconveniences (namely, the dryness of the atmosphere), extensive arrangements had, we understand, been made before the opening of last session of Parliament, but were suspended, owing to the concurrent approbation expressed by members of all parties of the improved ventilation of the house by the steps already taken.

For preventing any inconvenience from the diffusion of dust in a room frequented in all weathers, and all times of the day, by a large body of persons, Dr. Reid had, besides other things, introduced a hair-cloth, of particular texture, for the floor. This cloth, during the whole of last season, appears to have been lifted with comparative regularity and attention to the object for which it was designed. The result of Dr. Reid's examination, since he has come to town, is, that an article of a totally different texture, and wholly unfit for the purpose, has been substituted for it during the present session ; and that even this had not received the attention bestowed on the hair-cloth of last session. It will be obvious that it would be impossible to avoid all inconvenience from the diffusion of small particles of dust, but by the adoption of another plan suggested by Dr. Reid when his plans were first put into execution, and by which a current of fresh air would descend from the ceiling, instead of ascending, as at present, through the floor. For the adoption of this plan, however, a new mode of lighting the house would be indispensable. The first step to which must be the removal of the lights at present used within the body of the house. It was part of the original plan that these lights should occupy a space separated from the lower portion of the body of the house by a ceiling of glass, and through which, in fact, the house is at present lighted in the daytime.

A trial of this plan took place on the evening of the 30th of December last ; and although the preparations are as yet necessarily very imperfect, having been got up within the short interval of twenty-four hours, so far as we could judge, we anticipate a successful result. (*Morn. Chron.*, Jan. 1. 1838.)

Serjeant's Inn, Chancery Lane. — Within the last month, great progress has been made in the street front of the new building, the walls of which are now carried up nearly to the top of the first floor above the basement. At present, the work is quite in the rough, preparatory to being stuccoed ; therefore it is impossible to speak of the style or details, beyond conjecturing that they will, if not be precisely similar, resemble those of the portion behind, already finished ; and, as there will be thirteen windows on each of the upper floors, the whole cannot very well fail to be a rather conspicuous piece of street architecture. In the basement there will be only eleven windows, viz. three in the centre, between two large square-headed entrances (one of which is intended to form an open passage into the court), and four on the side of each of these doorways. These latter, and each of the extreme windows, are placed in slightly projecting breaks ; thus there are four narrow compartments with three windows of a floor, between them. — *W. II. Dec.*, 1837.

The late Royal Exchange. — If our architects do not erect a temple to Vulcan, they will show themselves to possess little gratitude ; for that classical fire-king has just been doing what, it may safely be presumed, will lead, as a matter of course, to an open competition of designs for a new Royal Exchange. And it is further to be hoped, matters will be managed somewhat differently on this occasion from what they were on a late one, by there being a public exhibition of all the drawings beforehand, instead of after the decision shall have been made. Perfectly am I aware that the mode here recommended to be pursued is not entirely free from objections, or that it must of necessity insure the adoption of the very best design of all : in numerous cases, for instance, the authors of the respective designs would probably be recognised almost immediately by their style, both in regard to taste and composition, as distinctly as if their names were attached to their drawings (at least, by their brother architects), and, consequently, not long remain concealed from the public. On the other hand, those who had interest

with influential persons, might contrive that they should be at no loss to know in favour of what particular design they ought strenuously to exert themselves. Still, taking the very worst view of the matter, there would be a very strong check upon favouritism on the part of the building committee, and of prejudice as to names on the part of the public ; and, although we may not be able to steer entirely clear of every thwarting contingency, it is but prudent to adopt every possible precaution while it is in our power to do so.

Besides securing a show, at least, of deference to public opinion and criticism, those with whom the ultimate selection rested, would find their task greatly lightened by having the opportunity of leisurely reviewing all the designs from time to time, after they had been hung up, and comparing them together, before they proceeded to sit formally in judgment upon them. Their labour, too, would be greatly abridged, were they gradually to weed out at intervals all such designs as were obviously inferior, and, consequently, had no likelihood of success, until they had reduced the whole collection to a dozen or so, that should demand a strict scrutiny into their respective claims. Were this done, in proportion to the difficulty of passing the final award would the danger be lessened of making an injudicious choice ; because, supposing the merits of the remaining designs to be so nicely balanced as to render it no easy matter to decide to which of them the preference, upon the whole, ought to be given, it is not likely any very serious error of judgment should be committed.

One objection as yet overlooked is, that, were such a mode of proceeding as is here recommended resorted to, many who stand high in the profession would not care to expose themselves to such a touchstone of their ability, and to risk the chance of being put aside among the discarded. No matter : let them, then, stand aloof ; though, as the names of the unsuccessful would not be divulged, they might keep their own counsel, and confine their disappointment to themselves.

That there will be an entirely new structure, may be taken for granted ; because, although the external walls are still standing, it will be found indispensable to take them down ; or, even should it prove possible to retain any part of them, it would be little less than an absurdity to adhere in any respect to the plan of the old fabric, and voluntarily forego the advantages of one that may be rendered greatly more commodious for transacting business, and certainly very much superior in point of taste. I forbear from here animadverting upon the solecisms, in this last-mentioned respect, which the building just destroyed exhibited ; it is enough to remark that even in the other, it was very far behindhand compared with such edifices as the new Exchange at Glasgow or the Bourse at Paris. All that it could boast, in the way of accommodation for those who frequented it, was, that, as far as mere space went, it was tolerably roomy, if its visitors were content with standing-room in the open quadrangle, let the weather be ever so wet or inclement ; but it certainly was not a place for its merchants, befitting the first mercantile city in the world. I will not go so far as to say that, even had it not been destroyed by fire, it ought to have been pulled down, and a more suitable edifice erected in its stead ; but I do say, since all that has been spared of it must come down, let the citizens of London console themselves for its loss, by availing themselves to the fullest extent of the opportunity thus forced upon them. One thing which it will now be in their power to do is, to widen and otherwise improve Threadneedle Street, by making that front of the Exchange parallel to the Bank, which it is to be presumed the ingenuity of our architects will be able to effect, without injury either to external or internal design. For the space that must thus necessarily be given up at one angle of the general plan, much more than an equivalent may be gained, by getting entirely rid of the shops which have hitherto encumbered the lower part of the building, and which certainly did not confer on it any dignity.

Without an accurate plan (and at the moment I am unable to refer to one of any kind), it is impossible for me to judge how far it would be possible to give greater capaciousness to a new edifice, without extending the site occu-

pied by the old one. For the present, however, I have said quite enough, even in my own opinion, — in that of others perhaps somewhat more. Doubtless, my pen is not the only one from which you will receive communications bearing upon the same subject: and, indeed, now that people begin to be tired of talking and writing, and sending forth pamphlets, *anent* the new Houses of Parliament, the late “awful conflagration,” as the newspapers joyfully announce it on their placards, is a perfect *God-send* to the architectural world; that little sphere in our modern system of the plurality of worlds, wherein I am fain to include amateurs, in spite of even Mr. Gwilt himself, and among them, if not exactly the unworthiest of the unworthy, the most arrant scribbler of them all — *Candidus*. *London, Jan. 15. 1838.*

[The Royal Exchange was burned down on the night of Jan. 10.; and a copious account of it will be found in all the daily newspapers of the 11th and 12th, and an excellent one in the *Dispatch* of Sunday, Jan. 14. In vol. i. of Britton's *Public Buildings of London*, there is the most copious and correct historical account of the Royal Exchange which has been published, illustrated by an elevation of the south front, and a view of the piazza; and in the second volume of Campbell's *Vitruvius Britannicus*, there are both a ground plan, and an elevation of the front with the original tower, and two lanterns at the end, which were afterwards removed. — *Cond.*]

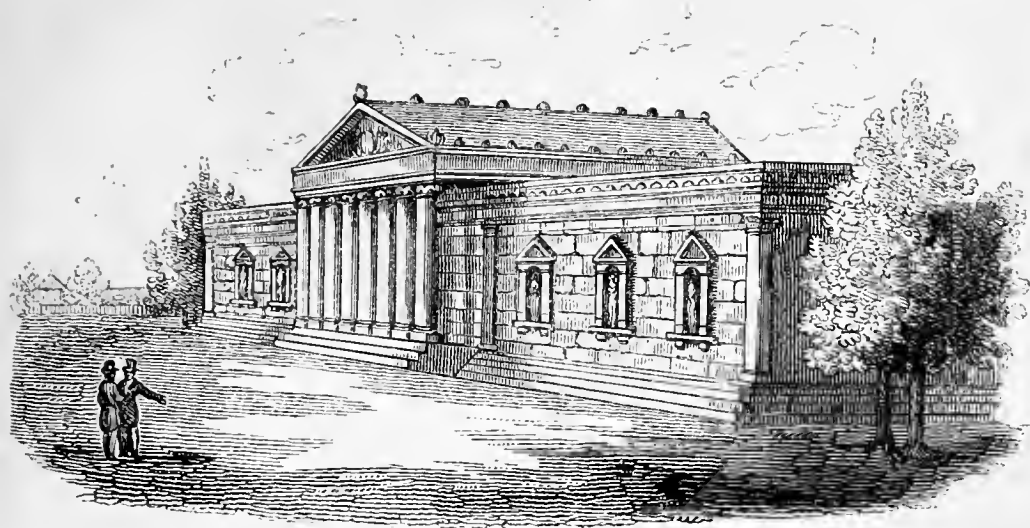
ART. III. *Restrospective Criticism.*

ERRATUM. — In Vol. IV. p. 593., line 3. from the bottom, for “ancient Greece,” read “ancient Greek.”

The Glyptotheca at Munich. (Vol. IV. p. 593.) — Your correspondent, G. B. W., refers your readers to Dr. Granville's work *On the Spas of Germany* for an account of the Sculpture Gallery at Munich; and seems impressed, from the doctor's rather too florid description, with an exaggerated idea of its magnificence and importance.

When I was at Munich, three years ago, I was much disappointed with this Glyptotheca, as the learned, antiquarian, and poetical king, Louis, has named it. Previously to arriving in Munich, I had heard the Glyptotheca spoken of with enthusiasm as a national monument; and, when I heard that the façade was *ganz vom Marmor*, I too, I own, was induced to form a high opinion of its splendour. To northern nations, the thought of a building entirely of marble has something imposing in it: it conveys the idea of a sort of palace of Aladdin; but the magic lamp, with all its powers, drops from our hand when we at last look upon the buildings themselves; as who will not own, that has seen the cathedrals of Milan or Florence? Their boasted marble adds but little to their magnificence; and few strangers, not apprised of the fact, would ever dream that marble was the valuable material of their structure, until they referred for information to their guide-book. But we have now an example of this fallacy nearer home, in the obstruction (commonly called triumphal arch) in front of Buckingham Palace.

To return to the Glyptotheca: the façade is of marble, certainly, entirely of marble; but this is not observable at first sight, as it has already assumed a light stone colour. The dimensions are insignificant, and, consequently, the effect, upon a first approach, is rather that of a graceful model, than the magnificent building that Dr. Granville's work would lead us to expect. It is extremely pure in design, quite Greek; but, from this very cause, it is low; a great defect to a modern eye, accustomed to lofty buildings, even in our common streets. The pure Greek wants much *adapting* to modern views: a simple copy will not do; in proof of which, I almost dare assert that, could one of the noble temples, whose ruins I visited at Pæstum, be transplanted to one of our open squares, its effect would not be striking, unless greatly elevated upon a noble basement of some description, or approached on all sides by deep flights of steps; and in this view, I believe, I am borne out by the good effect produced by such an arrangement in the Exchange at Paris. Of such



artificial elevation the Glyptotheca possesses nothing: there it is, a building of one story, nearly flat upon the ground; which, combined with its want of height, is a defect from which all its purity of design can never extricate it. *Fig. 30.* may give some idea of the style of building, though, doubtless, much less made out than the plate given by Dr. Granville, which I have not seen. The interior contains nine rooms, tolerably lighted, and containing a good collection of ancient sculpture; but they struck me as low and small, and, with all their pretension to mosaic and fresco, produced in their ornaments and decorations an effect chillingly cold.—*H. N. H.*

Davis's Gothic Ornaments.—I hope it is never too late to give praise where it is merited. Mr. Davis's *Gothic Ornaments illustrative of Prior Birde's Oratory in the Abbey Church of Bath* is one of the few works of the kind which careful drawing, on a large scale, entitles to a place in every architect's library; for, although the subjects are not numerous, they are excellent as studies for young artists, and carvers both in stone and wood.—*E. B. L.*

Parsey's Natural Convergence of Perpendiculars. (Vol. IV. p. 518.)—Candidus says, "What is to be done?"—"Really, this notable discovery of Parsey's brings us into a most perplexing dilemma; since, even were we ever so much inclined to do so, we cannot very well allow him to be right, without pronouncing all artists before now to have been entirely in the wrong."—"Seeing that it is utterly at variance with the *vested interests* and reputations of the greatest names in art."—These feelings have always manifested themselves on all great and useful discoveries. To Candidus's question it may be answered, that nothing will be more satisfactory to all parties than to adopt the new system, as it is incontrovertibly based on the true and immutable principles of nature; to which some unprejudiced scholars and artists of great reputation have testified. With respect to the dilemma he speaks of, would it not be more criminal to keep all present and future artists in the wrong, by arresting the new sources of reputation now opened to them, for the sake of those who have enjoyed the untarnishable praises due to distinguished merit? Candidus is pretty candid in setting aside my interest and reputation, when he speaks of vested interests and reputations. Probably, there is nothing more difficult than "rectifying" wilful prejudices: however, common sense will ever force truth to the foremost rank, whether the present race enjoy the enlightenment at command, or leave it to break forth in the next; when *that* generation may justly depreciate the blind obstinacy of the present, who shut themselves out from the merit of the past, and the credit of advancing the knowledge of the future. Candidus's questions about "lofty buildings appearing narrower at the top than at the bottom, &c., are fatal to his reasoning against the natural convergence of perpendiculars, as that is popularly known to be a natural effect, for which no laws are to be found in science, except in

Perspective Rectified. In justice to *my* reputation and *my* vested interest, I disclaim, that, "according to the new system, all lines parallel to the picture, horizontal as well as vertical ones (that is, those which are perpendicular to the sides, as well as such as are perpendicular to the base, of the picture), ought to converge, the one laterally, the others upwards and downwards, from the focus of vision, or point of sight." The attribution of this absurdity to me shows that Candidus has not formed an accurate knowledge or judgment of my principles, from his acknowledged *hearsay* information. As distinguished scholars and artists of all refined nations have endeavoured to solve this important problem from the earliest ages, the accomplishment of it by an Englishman, one should think, would naturally claim immediate recognition, if it were merely on the score of national pride.

The appearances of objects, or *what is really seen*, are seldom to be found on a plane vertical to the horizon, which is the plane of the picture which Candidus means, and every body else always meant, Hogarth and all! As this law has escaped observation, they are exonerated from any imputation; the satire will lie against those who violate the laws of nature for the future. — *Arthur Parsey. 23. Piccadilly, December 13. 1837.*

Parsey's Natural Convergence of Perpendiculars. — Allow me to make a few observations on a paper by Candidus (Vol. IV. p. 518.), not for the purpose of supporting the doctrine which he controverts (for, though he is wrong, Mr. Parsey is not right; and, indeed, I once took the liberty to tell him so in a public lecture-room, though, I hope, with courtesy), but to point out the mixture of truth and error which it contains.

Candidus, then, in his first paragraph, says, "I will make bold to deny that vertical lines converge, and ought to be so represented." Now, if I understand what he means by the former part of this sentence, I must submit to him that he makes *too* bold, for he "makes bold to deny" the truth; since no one who considers the subject can entertain any doubt but what perpendiculars do converge, though, as I intend to show, they ought *not* "to be so represented." Nay, more, not only vertical, but horizontal, lines also converge. So, then, Candidus is right when he says, "Not that there is one law for vertical, another for horizontal, lines;" but wrong when he explains himself by adding, "Horizontal lines, when they are parallel to it" (the picture), "merely decrease according to their distance, without in any degree converging;" and, that he may not accuse me of having "but half done my work," I will try and prove "this last-mentioned fancy also."

Now, if a person place himself opposite the side of a tower (or any building), the top must be further from him than that part which is directly level with his eye; and, therefore, the width there must appear smaller, as all things diminish as they recede; a principle which Candidus, I think, will not deny. The two angles of the tower, then, will appear closer at the summit than on the horizon (though the eye may not detect the difference); and, if this is not convergence of perpendiculars, I do not know what it is. Next, let this spectator situate himself directly opposite the centre of a long façade instead of a tower; then the two ends or extreme angles of the building, being farther from him, will appear lower than the centre, on the same principle as before; and, unless this is convergence of horizontals parallel to the plane of the picture, I know not what to call it. I am aware I here go further in some respects than Mr. Parsey himself; and, as I told him, I conceive I am correct in so doing.

For any, however, who may wish to look at the question in a more mathematical dress, I will subjoin the following plain demonstration, in which I have, I think, introduced all the important steps.

As all the angles of a triangle only equal two right angles, in every right-angled triangle the right angle must be greater than either of the other two; and, as the greater angle is subtended by the greater side, the side opposite the right angle will be greater than either of the other two sides.

Let, then, $abcd$ in *fig. 32.* represent the side of a tower perpendicular to the horizon, and of the same width all the way up; then ab , fg , and cd ,

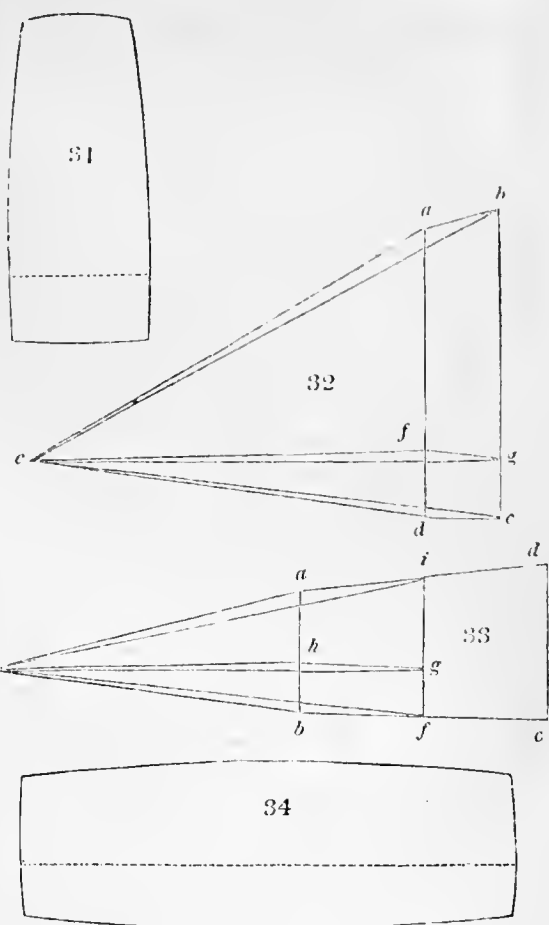
being the measures across at the summit, the horizon and base will be equal. Let, also, e represent the place of the spectator's eye. Completing the figure, efa is a right-angled triangle; of which efa , being the right angle, ea is the greatest side, and therefore greater than ef . In like manner, eb is greater than eg ; that is, ab is further from e than fg is.

Now, as with equal arcs or chords, angles vary inversely as the radii; and, as the chords ab and fg are equal, and the radii ea and eb are greater than the radii ef and eg ; therefore the angle aeb is less than the angle feg . In the same way, it may be shown that de is less than fg ; that is, that the angles of the tower appear to be nearer at the top and bottom of it, than directly opposite the eye.

In like manner, let $abc d$ (fig. 33.) be a façade of equal height throughout, and e as before; then ad , ab , cd , and if , being the height of the angles, and directly opposite the spectator, are all equal. Then, as before, egh being a right-angled triangle, of which egh is the right angle, eh is greater than eg , and, in like manner, ea is greater than ei , and as before. Angle aeh is less than angle ieg ; that is, ab looks less than gi , and, similarly, hb looks less than fg ; therefore, *à fortiori*, ab looks less than fi , or the height at the angle looks less than towards the centre. In the same way, cd will appear less than fi ; and, if id is equal to ia , the figure in the eye, on the theory that an image is depicted on the retina, and supposing that were a plane, will be something like fig. 34. and the tower like fig. 31. It will not be necessary to prove that the lines will be curves, though they will be. It must be observed, that the drawing of figs. 32. and 33. is necessarily somewhat distorted to show the line ef , eh , &c. For a similar reason, the curves of figs. 31. and 34. are exaggerated.

So, then, it appears that it is the vision of Candidus, and not that of Mr. Parsey, that is "altogether different from that of the rest of the world;" and so, too, "the summit of a lofty building" "does show itself sensibly narrower than the lower part;" a fact of which Candidus might satisfy himself by the use of a sextant, or even a common rule, minding to keep it always at the same distance from his eye. The reason why the eye does not discover it is, that the difference is but very small; because the distance at which we view a building is generally several times as great as its height or width, and the difference of distances from the eye is therefore only fractional, and, consequently, the difference of apparent dimensions only trifling. Another reason is, that when we see a number of lines are parallel, we suppose they *look* so, though, in fact, this is an optical illusion.

One would imagine, if one felt unkind, that the reason why Candidus objects to Mr. Parsey's theory is similar to the Pope's objection to the solar theory of Galileo; that, if he were right, all his predecessors, His Holiness not ex-



cepted, must be wrong. So Candidus : — “ Really, this notable discovery of Parsey’s brings us into a most perplexing dilemma, since, even were we ever so much inclined to do so, we cannot very well allow him to be in the right, without pronouncing all artists before now to have been entirely in the wrong.” “ What,” he asks, “ is to be done ? Are we, out of complaisance to Mr. Parsey and his discovery, to revolutionise that part of drawing to which it relates ? ” No, not unless true ; but, if true, then I answer, Most certainly. Are illustrious names to make error venerable ? Shall we allow truth to be sacrificed to the “ vested rights and reputations of the greatest names in art,” or to any thing else ? Certainly not. Let truth have its way ; and, in order to this, let fair discussion be maintained. Ridicule is not the way to answer a man, before having heard what he has to say. If the matter is worth noticing, let it be done in the way of fair argument, without appeals to “ modesty,” insinuations of “ very great delusion,” and wilful blindness to truth, or accusations of “ inordinately ambitious ” views and “ preposterous ideas.”

So much for Candidus. Let us now see whether Mr. Parsey is right. I have shown, I hope, that both horizontals and perpendiculars converge. Now, ought they to be so represented ? I answer, No. Because the eye puts not only the natural objects into perspective, but also the picture or representation of them ; so that the lines of the diagrams may be taken as the actual lines of the drawing, instead of representatives, and the demonstration remains as complete as ever. So, then, *figs.* 31. and 34. are not what are to be drawn, but only the figures which are formed in the eye.

One particular inconvenience, greater than the destruction of “ vested rights ” Candidus talks of, would result from our being obliged to make these lines converge ; namely, that, when we viewed any picture, we must always have our eye directly opposite the junction of the horizontal and vertical lines to which the others converge, and at one particular distance from it, and must look steadily and steadfastly at that point alone, or else all the parts would be out of drawing ; for every time we move our eye we alter the perpendicular or horizontal lines to which the others converge. Fortunately for us, then, Mr. Parsey’s theory is not correct.

The fact is, we have only length and breadth on which to represent length, breadth, and thickness. This last must, therefore, be represented by the convergence of its lines. When we have thickness also, we do not converge or decrease, but only diminish the scale, as in a model.

In one point, Mr. Parsey is right, practically as well as speculatively ; viz. that perpendiculars decrease in apparent length as they are raised from the horizon of the spectator : *e. g.* a story 30 ft. above the eye will not look so high as one of the same height directly before the spectator. This is observed by some draughtsmen, though generally the correction necessary is small ; but by most I believe it is neglected.

I should not have troubled you with this, but, as the subject had been touched upon, I thought your readers might imagine no stronger reasons could be brought against Mr. Parsey’s theory than had been adduced. I also *thought* that Candidus did not treat him quite so courteously as I have no doubt he would have done had he had an opportunity of seeing and hearing him. — *Wm. Willmer Pocock, jun., A.R.C., Ass. of Inst. Brit. Arch. Knights-bridge, Dec. 5. 1837.*

Remarks on the Convergence of Perpendiculars. (Vol. IV. p. 518.) — If Candidus had reflected a little more attentively on the cause of the apparent convergence of retiring lines, he would not have been so witty at Mr. Parsey’s expense, and would not have committed the absurdity of supposing that perpendiculars were not subject to the same laws as horizontal or inclined lines.

First, Let *fig.* 35. be a space of flat pavement, the chequering lines of which are at right angles to each other ; one series going to the point of sight *a* ; consequently, the others are all at right angles to the line of vision *a b*. These, therefore, do not retire from the spectator, and will not appear to converge. But the eye is incapable of receiving at once rays of light which enter it con-

verging at a greater angle than 60° . The parallel lines, therefore, $d c, d' c', \&c.$, each subtend an angle of 60° ; and the eye cannot see farther along them, on either side, without turning. Now, the moment the eye is turned, the lines retire from it, and, consequently, appear to converge.

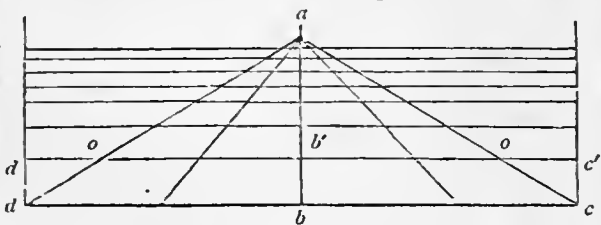
Now, let $a b$ be considered a base line; then the lines $b c, b' c', \&c.$, are perpendiculars; but they are subject to the same laws as they were before; and, consequently, as long as they subtend an angle less than 60° , they will not converge; but the moment the eye has to turn and look up, convergence will commence. So much for theory. Now, Candidus asks why perpendiculars never appear, in fact, to converge. Let him consider that we seldom contemplate any building at a less distance than 40 yards. Before its perpendicular lines, therefore, will converge, they must be 200 ft. high; if we stand within 20 yards, more than 100 ft., &c. And, to satisfy himself that perpendiculars which subtend a greater angle than 60° do, in fact, appear to converge; let him go to the bottom of the monument, stand 12 yards from its base, and look up; and then let him talk about the non-convergence of perpendiculars, if he can.

Hence, it appears that perpendiculars do not, in general, appear to converge, because they are always at right angles to the direction in which the spectator is looking; and they never can be represented as converging, because no picture may subtend a greater angle than 60° , either in breadth or height. Take, for instance, the annexed rude perspective outline of a cathedral nave (*fig. 36.*).

The height is 100 ft.; the distance between the columns, 20 ft.; consequently, the angular elevation of the roof, between the two nearest columns, is greater than 60° . The head would be turned upwards in looking at it; and it consequently cannot be represented in the drawing, whose upper limit, therefore, must cut off the roof between the second and third column.

Secondly, Let it not be supposed that I mean to say that perpendiculars, being right lines, are to be represented by lines which are first parallel, and then converging. Let us go back to *fig. 35.* Here, as the line $d c$ subtends an angle of 60° , our distance from its central point b (supposing $d c$ to be 100) is 90 feet, or yards, or anything. But our distance from c or d is the length of the line, or 100. Now, a near line or space, in whatever direction distance is measured, must always appear greater than one

35



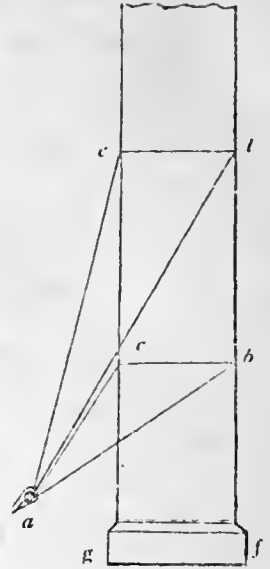
36



more remote. Therefore, the space $b b'$, from which we are distant 90 ft., appears greater than the space $c c'$, from which we are distant 100 ft. Therefore, the parallel lines $b c$, $b' c'$, &c., appear to converge. Similarly, perpendiculars appear to converge; but their apparent convergence is so excessively small, that it escapes the eye, until they subtend a greater angle than 60° ; and, for all practical purposes, may be considered as parallel, particularly as their convergence is infinitely small, when they are distant from the eye, as in the case of the distant lines of fig. 35.

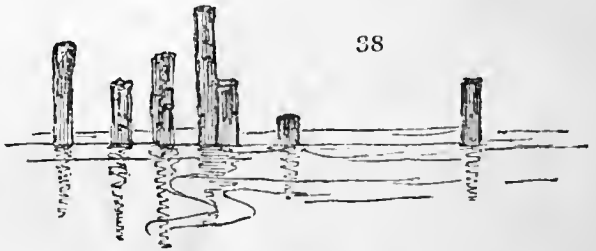
But, that Candidus may be more perfectly convinced of the truth of this reasoning, applied to perpendiculars, let $d e f g$ in fig. 37. be a vertical column: let the eye of the spectator be at a . Now, it is evident that the diameter of the column $e d$ is at a greater distance from a than the diameter $c b$; consequently, angle $b a c$ is greater than angle $d a c$: therefore, the diameter $c b$, which the eye measures by means of the angle $b a c$, appears greater than the diameter $e d$, which is measured by the angle $d a e$; and, consequently, the perpendiculars $g e$, $f d$, appear to converge. But, if a be removed to any moderate distance from the column, the difference between the angles will be so excessively small, that the convergence is unperceived, and, in practice, ought to be unexpressed.

37



Thirdly, I have hitherto referred perpendiculars to vertical vanishing points; but, by considering them as the representatives of horizontal lines, they may be referred to vanishing points on the horizon. Let fig. 38. be a few perpendicular posts in water. Their reflections are, of course, also perpendicular. But let it be considered how these reflections are formed: they are formed by rays of light coming from the object, striking on the water, and reflected from its surface to the eye. But, in order that the rays may meet the eye, the point on the water from which they are reflected must be directly between the object and the eye; and the whole line of points, therefore, must be between the object and the eye. Therefore, all the actual lines of reflection on the surface of the water are lines *diverging* from the spectator to the base of the reflected object. But

38



those lines appear parallel and perpendicular; whence, it is evident that *all perpendiculars are the representatives of lines on a horizontal surface, diverging from the spectator as a centre*. As a farther example of this, let us return to fig. 35. Here, the portion of the line $d' c'$, which is equal to $d c$, is $o o$; therefore, the distance $d' c'$ is greater than $d c$; therefore, the perpendiculars $d d'$, $c c'$, are the representatives of horizontal divergent lines.

Now, since the lines represented by perpendiculars diverge from the spectator, they meet at the spectator; that is, in a point beneath, in his feet. Therefore, perpendiculars which are below the horizon converge to a point beneath his feet; and perpendiculars above the horizon, to a point above his head. These two points, therefore, are points of sight on a vertical horizon, to which all perpendiculars must converge. They correspond to the horizontal point of sight to which horizontal lines converge; and the distance between the spectator and the base of the perpendicular corresponds to the perpendicular distance between his eye and the commencement of the horizontal line. From all this, it appears that perpendiculars only appear to converge under peculiar circumstances, which can never be represented in a drawing.—*Kata Phusin. Oxford, Nov. 17. 1837.*

THE ARCHITECTURAL MAGAZINE.

MARCH, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *The Poetry of Architecture.* By KATA PHUSIN.

No. 2. THE COTTAGE — continued.

IV. *The Mountain Cottage.* — Westmoreland.

WHEN I devoted so much time to the consideration of the peculiarities of the Swiss cottage, I did not previously endeavour to ascertain what the mind, influenced by the feelings excited by the nature of its situation, would be induced to expect, or disposed to admire. I thus deviated from the general rule which I hope to be able to follow out ; but I did so only because the subject of consideration was incapable of fulfilling the expectation when excited, or corresponding with the conception when formed. But now, in order to appreciate the beauty of the Westmoreland cottage, it will be necessary to fix upon a standard of excellence, with which it may be compared.

One of the principal charms of mountain scenery is its solitude. Now, just as silence is never perfect or deep without motion, solitude is never perfect without some vestige of life. Even desolation is not felt to be utter, unless in some slight degree interrupted : unless the cricket is chirping on the lonely hearth, or the vulture soaring over the field of corpses, or the one mourner lamenting over the red ruins of the devastated village, that devastation is not felt to be complete. The anathema of the prophet does not wholly leave the curse of loneliness upon the mighty city, until he tells us that “the satyr shall dance there.” And, if desolation, which is the destruction of life, cannot leave its impression perfect without some interruption, much less can solitude, which is only the absence of life, be felt without some contrast. Accordingly, it is, perhaps, never so perfect as when a populous and highly cultivated plain, immediately beneath, is visible through the rugged ravines, or over the cloudy summits of some tall, vast, and voiceless mountain. When such a prospect is not attainable, one of the chief uses of the mountain cottage, paradoxical as the idea may appear, is to increase this sense of solitude. Now, as it will only do so when it is seen at a considerable distance, it is necessary that it should be visible, or, at least, that its presence should be indicated, over a con-

siderable portion of surrounding space. It must not, therefore, be too much shaded with trees, or it will be useless; but if, on the contrary, it be too conspicuous on the open hill side, it will be liable to most of the objections which were advanced against the Swiss cottage, and to another, which was not then noticed. Anything which, to the eye, is split into parts, appears less as a whole than what is undivided. Now, a considerable mass, of whatever tone or colour it may consist, is as easily divisible by dots as by lines; that is, a conspicuous point, on any part of its surface, will divide it into two portions, each of which will be individually measured by the eye, but which will never make the impression which they would have made, had their unity not been interrupted. A conspicuous cottage on a distant mountain side has this effect in a fatal degree, and is, therefore, always intolerable. It should accordingly, in order to reconcile the attainment of the good, with the avoidance of the evil, be barely visible: it should not tell as a cottage on the eye, though it should on the mind; for be it observed that, if it is only by the closest investigation that we can ascertain it to be a human habitation, it will answer the purpose of increasing the solitude quite as well as if it were evidently so; because this impression is produced by its appeal to the thoughts, not by its effect on the eye. Its colour, therefore, should be as nearly as possible that of the hill on which, or the crag beneath which, it is placed: its form, one that will incorporate well with the ground, and approach that of a large stone more than of any thing else. The colour will consequently, if this rule be followed, be subdued and greyish, but rather warm; and the form simple, graceful, and unpretending. The building should retain the same general character on a closer examination. Every thing about it should be natural, and should appear as if the influences and forces which were in operation around it had been too strong to be resisted, and had rendered all efforts of art to check their power, or conceal the evidence of their action, entirely unavailing. It cannot but be an alien child of the mountains; but it must show that it has been adopted and cherished by them. This effect is only attainable by great ease of outline and variety of colour; peculiarities which, as will be presently seen, the Westmoreland cottage possesses in a super-eminent degree.

Another feeling, with which one is impressed during a mountain ramble, is humility. I found fault with the insignificance of the Swiss cottage, because "it was not content to sink into a quiet corner, and personify humility." Now, had it not been seen to be pretending, it would not have been felt to be insignificant; for the feelings would have been gratified with its sub-

mission to, and retirement from, the majesty of the destructive influences which it rather seemed to rise up against in mockery. Such pretension is especially to be avoided in the mountain cottage: it can never lie too humbly in the pastures of the valley, nor shrink too submissively into the hollows of the hills; it should seem to be asking the storm for mercy, and the mountain for protection; and should appear to owe to its weakness, rather than to its strength, that it is neither overwhelmed by the one, nor crushed by the other.

Such are the chief attributes, without which a mountain cottage cannot be said to be beautiful. It may possess others, which are desirable or objectionable, according to their situation, or other accidental circumstances. The nature of these will be best understood by examining an individual building. The material is, of course, what is most easily attainable and available without much labour. The Cumberland and Westmoreland hills are, in general, composed of clay-slate and greywacke, with occasional masses of chert (like that which forms the summit of Scawfell), porphyritic greenstone, and syenite. The chert decomposes deeply, and assumes a rough, brown, granular surface, deeply worn and furrowed. The clay-slate and greywacke, as it is shattered by frost, and carried down by the torrents, of course forms itself into irregular flatish masses. The splintery edges of these are in some degree worn off by the action of water; and, slight decomposition taking place on the surface of the clay-slate furnishes an aluminous soil, which is immediately taken advantage of by innumerable lichens, which change the dark grey of the original substance into an infinite variety of pale and warm colours. These stones, thus shaped to his hand, are the most convenient building materials the peasant can obtain. He lays his foundation and strengthens his angles with large masses, filling up the intervals with pieces of a more moderate size; and using here and there a little cement to bind the whole together, and to keep the wind from getting through the interstices; but never enough to fill them altogether up, or to render the face of the wall smooth. At intervals of from 4ft. to 6ft. a horizontal line of flat and broad fragments is introduced projecting about a foot from the wall. Whether this is supposed to give strength, I know not; but, as it is invariably covered by luxuriant stonecrop, it is always a delightful object.

The door is flanked and roofed by three large oblong sheets of grey rock, whose form seems not to be considered of the slightest consequence. Those which form the cheeks of the window (*fig. 39.*) are generally selected with more care from the debris of some rock, which is naturally smooth and polished, after being subjected to the weather, such as granite or syenite.

The window itself is narrow and deep set: in the better sort of cottages, latticed, but with no affectation of sweetbriar or eglantine about it. It may be observed of the whole of the cottage, that, though all is beautiful, nothing is pretty. The roof is rather flat, and covered with heavy fragments of the stone of which the walls are built, originally very loose; but generally cemented by accumulated soil, and bound together by houseleek, moss, and stonecrop: brilliant in colour, and singular in abundance. The form of the larger cottages, being frequently that of a cross, would hurt the eye by the sharp angles of the roof, were it not for the cushion-like vegetation with which they are rounded and concealed. Varieties of the fern sometimes relieve the massy forms of the stonecrop, with their light and delicate leafage. Windows in the roof are seldom met with. Of the chimney I shall speak hereafter.

39



Such are the prevailing peculiarities of the Westmoreland cottage. "Is this all?" some one will exclaim: "a hovel, built of what first comes to hand, and in the most simple and convenient form; not one thought of architectural beauty ever coming into the builder's head!" Even so, to this illustration of an excellent rule, I wished particularly to direct attention; that the material which Nature furnishes, in any given country, and the form which she suggests, will always render the building the most beautiful, because the most appropriate. Observe how perfectly this cottage fulfils the conditions which were before ascertained to be necessary to perfection. Its colour is that of the ground on which it stands, always subdued and grey, but exquisitely rich, the colour being disposed crumbly, in groups of shadowy spots; a deep red brown, passing into black, being finely contrasted with the pale yellow of the *Lichen geographicus*, and the subdued white of another lichen, whose name I do not know; all mingling with each other as on a native rock, and with the same beautiful effect: the mass, consequently, at a distance, tells only as a large stone would, the simplicity of its form contributing still farther to render it inconspicuous. When placed on a mountain side, such a cottage will become a point of interest, which will relieve its monotony, but will never cut the hill in two, or take away from its size. In the valley, the colour of these cottages agrees with every thing: the green

light, which trembles through the leafage of the taller trees, falls with exquisite effect on the rich grey of the ancient roofs; the deep pool of clear water is not startled from its peace by their reflection; the ivy or the creepers, to which the superior wealth of the peasant of the valley does now and then pretend, in opposition to the general custom, cling gracefully and easily to its innumerable crevices; and rock, lake, and meadow seem to hail it with a brotherly affection, as if Nature had taken as much pains with it as she has with them.

Again, observe its ease of outline. There is not a single straight line to be met with from foundation to roof, all is bending or broken. The form of every stone in its walls is a study; for, owing to the infinite delicacy of structure in all minerals, a piece of stone 3 in. in diameter, irregularly fractured, and a little worn by the weather, has precisely the same character of outline which we should find and admire in a mountain of the same material 6000 ft. high; and, therefore, the eye, though not feeling the cause, rests on every cranny, and crack, and fissure with delight. It is true that we have no idea that every small projection, if of chert, has such an outline as Scawfell's; if of greywacke, as Skiddaw's; or if of slate, as Helvellyn's; but their combinations of form are, nevertheless, felt to be exquisite, and we dwell upon every bend of the rough roof, and every hollow of the loose wall, feeling it to be a design which no architect on earth could ever equal, sculptured by a chisel of unimaginable delicacy, and finished to a degree of perfection, which is unnoticed only because it is everywhere.

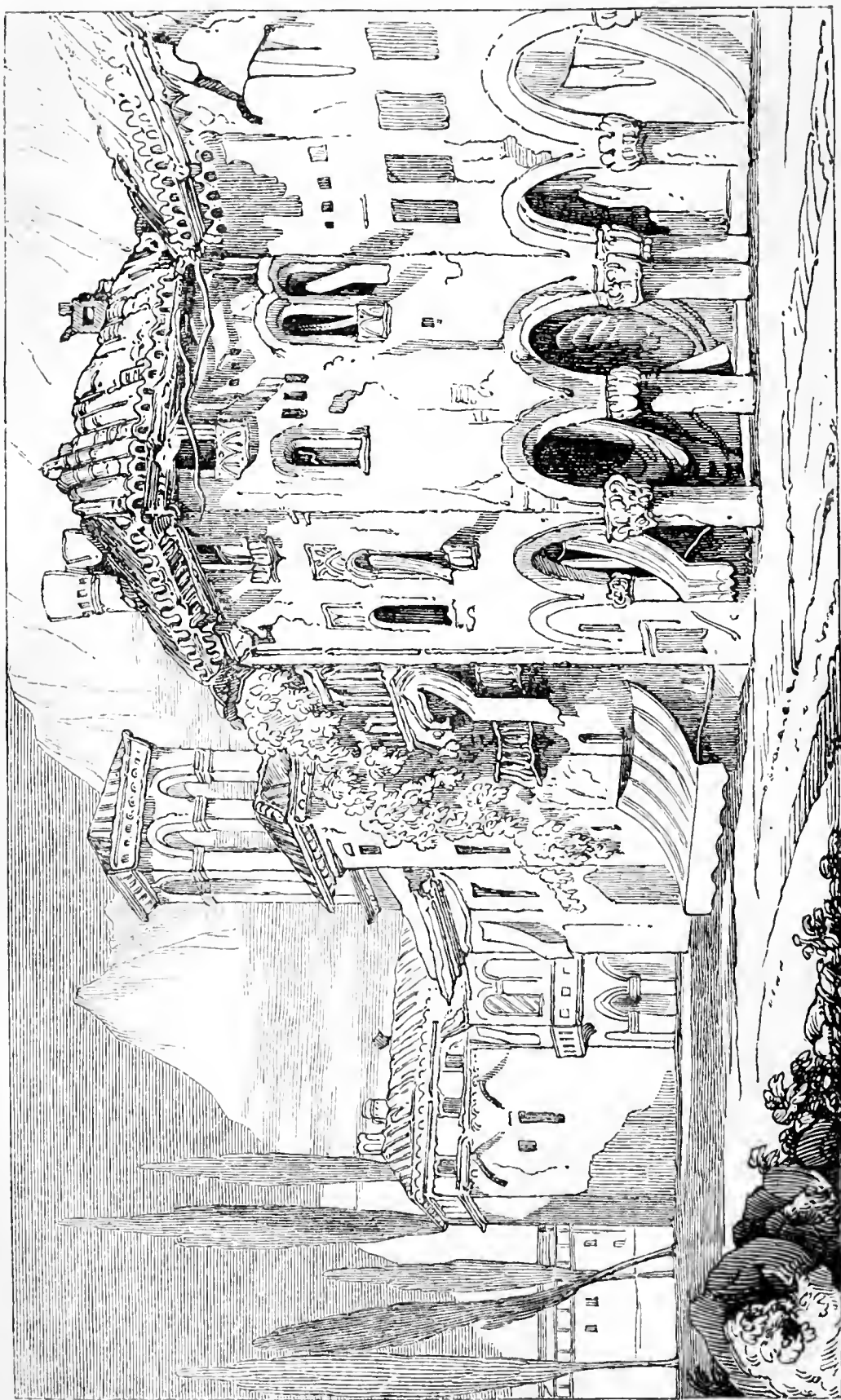
This ease and irregularity is peculiarly delightful here: gracefulness and freedom of outline and detail are, as they always are in mountain countries, the chief characteristics of every scene. It is well that, where every plant is wild and every torrent free, every field irregular in its form, every knoll various in its outline, one is not startled by well-built walls, or unyielding roofs, but is permitted to trace in the stones of the peasant's dwelling, as in the crags of the mountain side, no evidence of the line or the mallet, but the operation of eternal influences, the presence of an Almighty hand. Another perfection connected with its ease of outline is, its severity of character: there is no foppery about it; not the slightest effort at any kind of ornament, but what nature chooses to bestow; it wears all its decorations wildly, covering its nakedness, not with what the peasant may plant, but with what the winds may bring. There is no gay colour or neatness about it; no green shutters or other abomination: all is calm and quiet, and severe, as the mind of a philosopher, and, withal, a little sombre. It is evidently old, and has stood many trials in its day; and the snow, and the tem-

pest, and the torrent, have all spared it, and left it in its peace, with its grey head unbowed, and its early strength unbroken, even though the spirit of decay seems creeping, like the moss and the lichen, through the darkness of its crannies. This venerable and slightly melancholy character is the very soul of all its beauty.

There remains only one point to be noticed, its humility. This was before stated to be desirable, and it will here be found in perfection. The building draws as little attention upon itself as possible; since, with all the praise I have bestowed upon it, it possesses not one point of beauty in which it is not equalled or excelled by every stone at the side of the road. It is small in size, simple in form, subdued in tone, easily concealed or overshadowed; often actually so; and one is always delighted and surprised to find that what courts attention so little is capable of sustaining it so well. Yet it has no appearance of weakness: it is stoutly, though rudely, built; and one ceases to fear for its sake the violence of surrounding agencies, which, it may be seen, will be partly resisted by its strength, and which we feel will be partly deprecated by its humility. Such is the mountain cottage of Westmoreland; and such, with occasional varieties, are many of the mountain cottages of England and Wales. It is true that my memory rests with peculiar pleasure in a certain quiet valley near Kirkstone, little known to the general tourist, distant from any public track, and, therefore, free from all the horrors of improvement; in which it seemed to me that the architecture of the cottage had attained a peculiar degree of perfection. But I think that this impression was rather produced by a few seemingly insignificant accompanying circumstances, than by any distinguished beauty of design in the cottages themselves. Their inhabitants were evidently poor, and apparently had not repaired their dwellings since their first erection; and, certainly, had never torn one tuft of moss or fern from roofs or walls which were green with the rich vegetation of years. The valley was narrow, and quiet, and deep, and shaded by reverend trees, among whose trunks the grey cottages looked out, with a perfection of effect which I never remember to have seen equalled, though I believe that, in many of the mountain districts of Britain, the peasant's domicile is erected with equal good taste. I have always rejoiced in the thought, that our native highland scenery, though, perhaps, wanting in sublimity, is distinguished by a delicate finish in its details, and by a unanimity and propriety of feeling in the works of its inhabitants, which are elsewhere looked for in vain; and the reason of this is evident. The mind of the inhabitant of the continent, in general, is capable of deeper and finer sensations than that of the islander. It is higher in its aspirations, purer in its passions, wilder in its

dreams, and fiercer in its anger ; but it is wanting in gentleness, and in its simplicity ; naturally desirous of excitement, and incapable of experiencing, in equal degree, the calmer flow of human felicity, the stillness of domestic peace, and the pleasures of the humble hearth, consisting in every-day duties performed, and every-day mercies received ; consequently, in the higher walks of architecture, where the mind is to be impressed or elevated, we never have equalled, and we never shall equal, them. It will be seen hereafter, when we leave the lowly valley for the torn ravine, and the grassy knoll for the ribbed precipice, that, if the continental architects cannot adorn the pasture with the humble roof, they can crest the crag with eternal battlements ; if they cannot minister to a landscape's peace, they can add to its terror ; and it has been already seen, that, in the lowland cottages of France and Italy, where high and refined feelings were to be induced, where melancholy was to be excited, or majesty bestowed, the architect was successful, and his labour was perfect : but, now, nothing is required but humility and gentleness ; and this, which he does not feel, he cannot give : it is contrary to the whole force of his character, nay, even to the spirit of his religion. It is unfelt even at the time when the soul is most chastened and subdued ; for the epitaph on the grave is affected in its sentiment, and the tombstone gaudily gilded, or wreathed with vain flowers. We cannot, then, be surprised at the effort at ornament and other fancied architectural beauties, which injure the effect of the more peaceful mountain scenery abroad ; but still less should we be surprised at the perfect propriety which prevails in the same kind of scenery at home ; for the error which is there induced by one mental deficiency, is here prevented by another. The uncultivated mountaineer of Cumberland has no taste, and no idea of what architecture means ; he never thinks of what is right, or what is beautiful, but he builds what is most adapted to his purposes, and most easily erected : by suiting the building to the uses of his own life, he gives it humility ; and, by raising it with the nearest material, adapts it to its situation. This is all that is required, and he has no credit in fulfilling the requirement, since the moment he begins to think of effect, he commits a barbarism by whitewashing the whole. The cottages of Cumberland would suffer much by this piece of improvement, were it not for the salutary operation of mountain rains and mountain winds.

So much for the hill dwellings of our own country. I think the examination of the five examples of the cottage which I have given have furnished all the general principles which are important or worthy of consideration ; and I shall therefore devote no more time to the contemplation of individual buildings. But,

*Cottage near La Cité Val d'Aosta.*

before I leave the cottage altogether, it will be necessary to notice a part of the building which I have in the separate instances purposely avoided mentioning, that I might have the advantage of immediate comparison; a part exceedingly important, and which seems to have been essential to the palace as well as to the cottage, ever since the time when Perdiccas received his significant gift of the sun from his Macedonian master, περιγράφας τὸν ἥλιον, ὃς ἦν κατὰ τὴν καπνοδόκην ἐς τὸν οἶκον ἐσέχων; and then I shall conclude the subject by a few general remarks on modern ornamental cottages, illustrative of the principle so admirably developed in the beauty of the Westmoreland building, to which, it must be remembered, the palm was assigned, in preference to the Switzer's; not because it was more laboured, but because it was more natural.

Oxford, Jan. 1838.

ART. II. *Supplementary Notice to the Paper on the Lowland Cottage, Italy, p. 7.* By KATA PHUSIN.

THE annexed woodcut (*fig. 40.*) was intended to appear with, and in illustration of, the paper on the Lowland Cottage, Italy, but was delayed by the engraver; it will, perhaps, make the remarks then advanced more intelligible. The building, which is close to the city of Aosta, unites in itself all the peculiarities for which the Italian cottage is remarkable: the dark arcade, the sculptured capital, the vine-covered gallery, the flat and confused roof; and clearly exhibits the points to which we wish particularly to direct attention; namely, brightness of effect, simplicity of form, and elevation of character. Let it not be supposed, however, that such a combination of attributes is rare: on the contrary, it is common to the greater part of the cottages of Italy. This building has not been selected as a rare example, but is given as a good one.

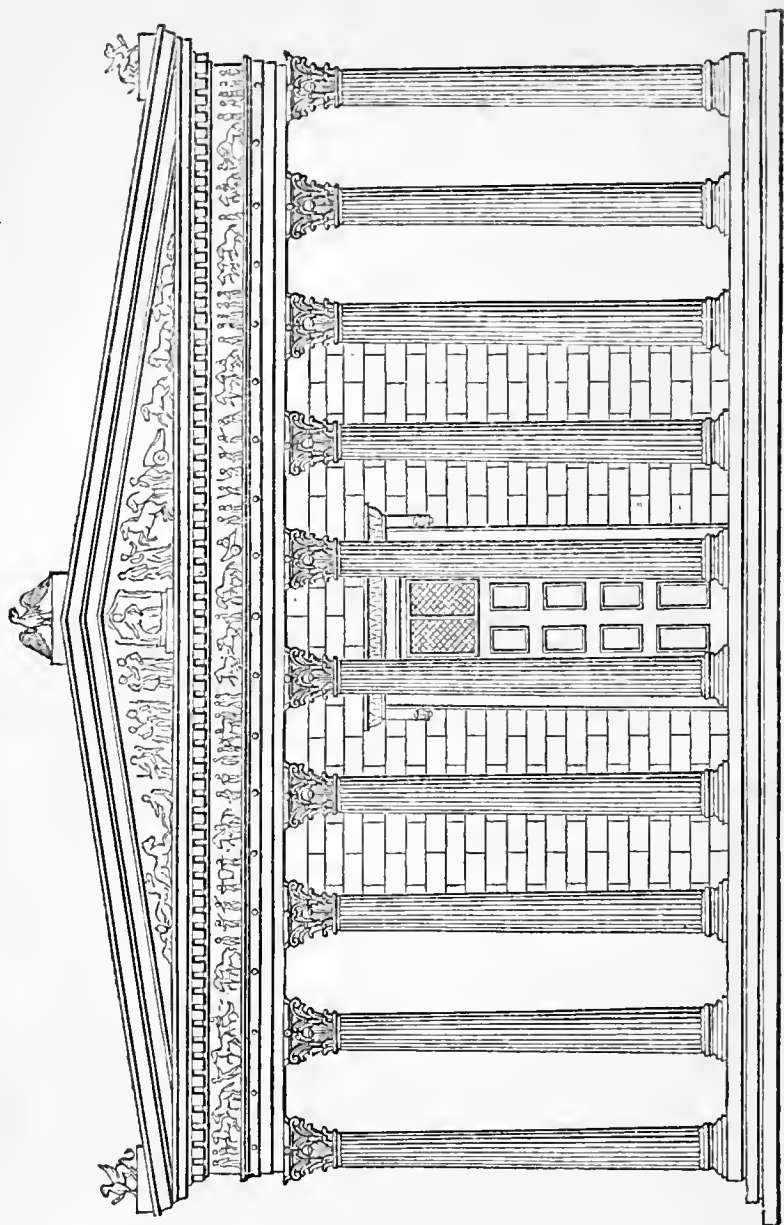
Oxford, Jan. 1838.

ART. III. *Ideal Restoration of the Athenian Olympieum.* By CHARLES E. A. BLAIR, Architect.

(Read at the Ordinary Meeting of the Royal Institute of British Architects, Jan. 15. 1838.)

IN presenting an ideal restoration of the Temple of Jupiter Olympius at Athens, some explanatory observations respecting the history of this temple appear to me to be in a measure necessary to exemplify the subject. I purpose, first, to advert to the descriptions left us by Pausanias and other authors; and, after-

41



wards, to show the materials from which I have produced the design (*fig. 41.*) now before you. That the subject is one of no ordinary interest, will, I think, be admitted; and, should the restoration in any way elucidate the form, arrangement, and proportion of a Grecian decastyle temple of the pycnostyle species, my wishes will be fully realised.

The state in which Pausanias (*lib. i. c. xviii.*) saw this temple, at the acme of its splendour, is thus described by him: — “The Emperor Hadrian dedicated the temple of Jupiter Olympius, and the statue, which is worthy of being seen; not, indeed, for its size (for at Rome and at Rhodes there are colossi much larger), but from being made of ivory and gold! with skill equal

to its magnitude. Here, also, are statues of Hadrian, two of which are of Thasian, and two of Egyptian, stone. In front of the columns there are brazen statues, belonging to the cities which the Athenians call colonial. The entire peribolus is about four stadia, or about one mile and a half, and is full of statues; for an image of the Emperor Hadrian is placed in it from every city; all of which the Athenians have greatly surpassed, by erecting the very remarkable colossus behind the naos, or cella, of the temple. There are within the peribolus, also, these antiquities: a brazen Jupiter, and the temple of Chronos and Rhea, and a sacred enclosure, to which they give the name of Olympia. Here the pavement has been rent to the breadth of a cubit, where they report the waters, after the deluge of Deucalion, to have run off. Every year they throw into this opening a cake made of flour mixed with honey. There is, also, here, on a column, a statue of Isocrates. In the same place, there are, also, Persians, of Phrygian marble, supporting a brazen tripod, both deserving to be remarked. It is reported that Deucalion built the most ancient temple of Olympian Jupiter; and, as a proof that Deucalion dwelt at Athens, they show his tomb, which is not far from the present temple."

Stuart describes the Olympium as consisting of seventeen Corinthian columns, each 6 ft. 6 in. in diameter, and nearly 60 ft. in height. The disposition of the plan evidently proves them to be the remains of a temple which had ten columns in front, and twenty-one in flank; and that it had two ranges of columns on each side. The extent of the front has been 171 ft., and the length of the flank 356 ft. 3 in.; so that, to describe this building in the language of Vitruvius, we must say it has been decastyle, dipteros, and hypæthrous, of great dimensions, or a complete example of the most sumptuous and stately of all the aspects of temples. It stood within a spacious area, which was enclosed by a peribolus, or surrounding wall, at present in great part demolished, but not so entirely as to prevent the measure of its side (that facing the south) from being perfectly ascertained.

Vitruvius tells us: "For at Athens, when Pisistratus set about building the Temple of Jupiter Olympius, the architects, Antistates, Callæschrus, Antimachides, and Porinos, laid the foundation. After the death of Pisistratus, because of the unsettled state of the republic, the prosecution of this work was discontinued; insomuch that it was about two hundred years afterwards (when King Antiochus had engaged to defray the expense of the structure) that it was magnificently erected by Cossutius, a Roman citizen, who determined the magnitude of the cella, and adjusted the arrangement of the columns about the dipteros, and the disposition of the architraves, and other ornaments, with

great skill and supreme science. This structure, indeed, is not spoken of with common praise: it is amongst those most renowned for their magnificence; for in four places only are seen sacred edifices adorned with marble which are thus celebrated; the excellence and sagacious contrivance of which have been approved of in the assembly of the gods." (*Vit. &c.*, lib. vii.)

The Earl of Aberdeen truly observes, in the preface to Mr. Wilkins's translation of *Vitruvius*, "that they display the utmost beauty and propriety, with, perhaps, the greatest degree of magnificence and grandeur ever attained to by the architectural exertions of the emperors of the Roman world. The remains of a dipteral temple, with columns, composed of the purest marble, more than 6 ft. 6 in. in diameter, and 60 ft. in height, cannot be described in any terms commensurate with the sensations excited by the view of the original."

Whenever, or by whomsoever, finished, these columns bear the indications of a pure age of Grecian art. Mr. Kinnard, the editor of the recent edition of Stuart's *Athens*, observes: "This was one of the largest and most sumptuous of all the temples of ancient Hellas; it was, also, equal, or superior, in the beauty of the marble, and the richness of the ornament, to the great Herœum of Samos, to the Didymæan temple of Miletus, and, probably, to the far-famed shrine of Ephesus!"

The ruins now existing of this temple do not comprise a tenth part of the entire structure, which, from the known dimensions of the great temples of antiquity spoken of by Vitruvius, appears (except that of Diana at Ephesus, and Jupiter Olympius at Agrigentum) to have surpassed all the others, both in magnitude and magnificence, and in completeness and perfection of execution. It was, in fact, the largest temple ever raised in Greece to the supreme pagan divinity. Speaking of Grecian art, Du Fresnoy, as translated by Dryden, poetically observes:—

"Mid curves that vary in perpetual twine,
Truth owns but one direct and perfect line;
Spread then her genuine charms o'er all the piece,
Sublime and perfect as they glow'd in Greece."

Stuart, who first described this temple as the Olympieum, being little explicit regarding the history of it, I shall here subjoin some of the leading circumstances attending its construction. It is probable that the earliest Athenian temple to Jupiter (of which, from tradition, Pausanias has attributed the foundation to Deucalion) was the first sanctuary raised at this spot; and it, in all probability, partook of the rudeness and absence of order of primeval architecture.

Pisistratus was the founder of the sacred temple commenced about 540 years before Christ; and, from the employment of

four architects in laying the foundations, it would seem to have been projected on a scale correspondent with its subsequent extent; but, according to the style of architecture then chiefly cultivated in Greece, the order of the structure was, doubtless, Doric.

The works of the temple were carried on by the sons of Pisistratus, but were discontinued on the destruction of that family; and, probably, from a well-founded enmity to those tyrants, an edifice undertaken by them was suffered to remain a memorial of abortive enterprise; but, from the testimony of Aristotle (*De Rep.*, l. v. c. 9.), which places it in the same category with the pyramids of Egypt, and the Temple of Juno at Samos, it may be inferred that, even in his time, the structure was an object of extraordinary admiration.

Long after the Pisistratidæ, and the factions opposed to them, were no more, Antiochus Epiphanes refounded the temple, of which the ruins now surprise and delight us. Antiochus having been a hostage at Rome, at that city, probably, Cossutius the architect became known to him, who was consequently employed on this temple, of which, according to Vitruvius, he designed with great taste and science the magnitude of the cella, the arrangement of the columns in the dipteros, the distribution of the architraves, and symmetrical introduction of the ornaments, with Corinthian decorations and proportions; and it must have required no ordinary skill on the part of Cossutius to have constructed the architraves, the distance from centre to centre of the columns being 15 ft. The temple appears to have been in a forward state when Sylla took Athens by assault. He is recorded to have transported to Rome some of the columns for the decoration of the Temple of Capitoline Jupiter: but it is probable that these columns belonged alone to the interior of the temple. So magnificent an offering to the Olympian divinity was not long suffered to remain, at that age, in a state of dilapidation and abandonment.

Suetonius says that the kings in alliance with Augustus had resolved, at their common expense, to complete the temple, and dedicate it to the genius of that emperor. At length, however, Hadrian appropriated to himself the renown of terminating and dedicating in person a temple which had been nearly 700 years in progress; which many sovereigns had vied in attempting to complete, and on which are said to have been expended 7,088 talents, or about 567,040*l*.

Of this magnificence, and of these monuments of adulation, all that now remain are the seventeen columns already described, a part of the terrace wall, and vestiges of that of the peribolus, together with some inscribed pedestals scattered about Athens.

These, doubtless, sustained the tributary statues of Hadrian. And it is remarkable that a seeming record of the great architect Cossutius, confirming Vitruvius, has survived the near destruction of this temple, in the following inscription, found in the vicinity of it, probably belonging to the base of a statue : —

DECIMUS COSSUTIUS,
SON OF PUBLIUS, A ROMAN.

History does not inform us of the progressive stages of destruction of this temple. At the time of the Marquis de Nointel, the ruin itself was in the same state as seen by Stuart and Revett, with the exception of a Greek chapel, rudely constructed within it, probably in a lower age, called St. John of the Columns, which now no longer exists. The Turks, also, had recently raised a stone pulpit, or praying place, at the south-east angle of the ancient peribolus; and, at periods of public calamity, were accustomed to assemble there for the purpose of simultaneous prayer; a proof how much the prejudice regarding the sanctity of a place once devoted to religion may impress the understanding, or to what a degree the emotion of the sublime, which is so powerfully produced by this ruin, is congenial with the contemplation of the Divinity, and affects equally all mankind.

Reigate, Jan. 26. 1838.

ART. IV. *Remarks on Competition Designs for rebuilding the Royal Exchange.* By HENRY NOEL HUMPHREYS.

By the unfortunate conflagration of the Royal Exchange, another grand opportunity is created for a display of the powers of our national school of architecture. There will doubtless be an open competition, an open trial of skill for the glory of rebuilding “the temple of commerce.” Much has been said and written in extenuation of the paucity of talent and true architectural genius displayed in a vast majority of the competing designs for the Houses of Parliament: as the display of a great national school, it was certainly contemptible; but then it is urged, in reply, that the restrictions respecting style cramped the genius and invention of many of the competitors; and, again, that the novelty of the system of open competition alarmed the prejudices of many among the most eminent of the profession; and, truly, after the long years of private jobbing, it was alarming enough to many who enjoyed government patronage, unchallenged by public opinion as to capacity and qualification. However this may be, it may now be fairly assumed, that, in the present instance, these alleged causes of failure will no

longer exist. That no particular style will be dictated to competitors, is now pretty clear from the proceedings and considerations that have already taken place upon the question. The inconveniences experienced by a contrary course have proved that every architect ought to be left to the genuine impulse resulting from his own taste and judgment, as to the style and character which ought to be imparted to a new building, both with reference to its individual structure, and also to its grouping with other buildings of importance in its immediate neighbourhood.

The other point, the novelty of the system of open competition, can no longer be pleaded; for public opinion has already pronounced too strongly upon this point, to admit of the slightest chance of any return to the old system of favouritism and monopoly in great public works. Therefore, all such as shun the chances of such a struggle must be considered as *hors de combat* as public practitioners; and few indeed will be induced thus to retire, only such, in short, as have much more to dread than to hope from the contest; and these cannot be considered a great loss to our school of architecture. Hence, we may infer that an open competition will now produce a fair sample of the state of the art in this country, an exhibition of the best powers of our best architects, and, I do trust, a noble display of national talent and genius in a truly noble art: for the European reputation of our school of architecture certainly requires that the impression produced by the late contest should be obliterated as soon as possible.

As this is a glorious opportunity for young architects to make their struggle for distinction, I trust they will come to the work with all the hope and enthusiasm that success requires; and I venture to offer the few ensuing remarks upon the style and spirit in which it appears to me that designs ought to be conceived. Before bestowing a thought upon the effect to be produced in the elevation, I would well consider the plan; which plan is to be founded upon the peculiar purposes and destinations of the building, to which it must be adapted with all possible fitness and convenience. It also behoves every architect well to consider whether the arrangements of the late building were good, and whether they fulfilled these conditions; and, if even pronounced good, whether any still better can be devised. Without giving full play and much reflection to such considerations, one might be led to adopt the general principles of the previous plan as an authorised pattern and precedent: for it requires some independence of thought, and firmness of opinion, to design a building for a precisely similar purpose, yet, totally different in arrangement from its predecessor; par-

ticularly when that predecessor had not been condemned and removed for any defect, supposed or real; but, on the contrary, being accidentally destroyed by a calamity generally deplored, and being almost universally admired as one of the chief architectural ornaments of the metropolis. These facts create involuntarily a sort of prejudice in favour of a similar arrangement, which we must suppress, and at once come to the simple question of fitness; unshackled by any over-scrupulous veneration for preexistent forms and feelings. Let us consider, for instance, whether the open quadrangle with the surrounding colonnade offers every requisite convenience for the daily meeting of mercantile men in this climate. It appears to me that it does not. Now, there are many ways and means by which greater protection from cold and wet may be advantageously obtained. I will just allude to two that have occurred to me as offering many advantages.

In the first place, a quadrangle and colonnade might exist, as at present; but to each walk ("Baltic," "American," "Portuguese," &c.) a coffee-house might be attached, opening to the colonnade, as do the shops in the Palais Royal. These would be rather public rooms than mere coffee-houses, to which, in consideration of a small annual subscription, merchants, captains, and others, should be entitled to free access and the use of tables, pens, ink, &c., without the necessity of taking refreshments, which, nevertheless, could be had in the adjoining eating-room, if required. The respective entrances to these rooms from the interior colonnade should be closed at usual change hours; but the entrance to the refreshment-room should be from the exterior, so that the general coffee-house business might be carried on in the regular way. Such establishments need not disfigure the symmetry of the building, on the exterior or interior, half so much as shops; indeed, not at all, and they would bring in a far greater rental. It may be urged against this plan, that it would injure the proprietors of such concerns as the North and South American coffee-houses, &c.; but, by giving the refusal of the proposed establishments to these individuals first, all injustice would be done away with. I am indebted for this idea to a commercial friend, for whose opinion I have the highest esteem; and, from his great experience and judgment, I feel confident of its practicability.

My other, and favourite, plan, would be to have no interior court, but to have the entire central space of such a quadrangular building occupied by a vast covered arena, a magnificent hall lighted from the roof, and surrounded by highly ornamented open galleries communicating with the entrance to the different apartments, offices, counting-houses, Lloyd's establishment, &c.,

of which arrangement the *loggia* of the Vatican may serve to give an idea. I think a grand hall, with its surrounding tiers of enriched galleries, approached by suitable flights of steps, would have a noble and novel appearance, as well as answering the purpose in view; namely, providing a suitable arena for the meetings of mercantile men, where business might be conveniently discussed at all seasons. This idea is thrown out in the rough, without any pretension to a well-digested plan; but, at a future time, I may attempt to develop it more completely. For the present, my only purpose is to call attention to a few principal points, for neither time nor space allow me to touch upon the more detailed arrangement of a plan.

In conclusion, therefore, I will just note down a few stray thoughts upon the character of the elevation. In the first place, I would say that I think it highly improbable, taking the locality and other circumstances into consideration, that any Gothic design will be adopted; therefore, let competitors eschew Gothic. Next, I would say eschew porticoes; nothing original can be done with them: the very few ancient models that remain to us have been twisted, and turned, and adapted in every possible way: they are now threadbare; and, unless some new model could be *determé* to infuse a little freshness of spirit, Greek porticoes had, I think, better be left alone. I dare say most architects have a very nice pattern or two which could be brought in without much trouble; but, I should say, leave it in the portfolio. Neither portico nor columns are indispensable requisites in such a building as the one in question: indeed, half the columns in our modern architecture support nothing. Columns supporting nothing! *lucus a non lucendo*. The admired exchange of Paris may, perhaps, be brought in witness against me: but I presume we do not want, as it were, a mere reprint of an ancient building in a structure devoted to commerce. Such an idea appears better suited for a plaster model to be placed in a museum, or, at most, to a building devoted in some way to the arts and their history and origin, than to one of the present character.

The Royal Exchange should, in its structure and design, display all the advantages resulting from the great discoveries of modern science which can be advantageously applied to architecture: it should be a monument of the existing state of the intelligence and original genius of the country; and a building conceived in this feeling could not fail to present such novel features as would be quite refreshing after all the servilities of the imitation system. I would just hint that a fire-proof structure would, perhaps, be thought to possess claims to preference after the recent calamitous conflagrations in different parts of Europe; and to such as feel that their talents and studies qualify

them for such an attempt, I would suggest the employment of iron to a great extent in some designs, the proper adoption and application of which would produce an entirely novel architectural feeling. Cast-iron columns of Doric proportions are ridiculous: half their bulk would support twice the weight above them. Every material, to insure elegance and truth, and such results as are alone in accordance with the real principles of taste, must be applied with due regard to its nature and to fitness; and, following out this principle, completely divested of the trammels of proportions fitted to and devised for other materials, new forms and combinations must result, which cannot fail to be agreeable to the practised eye of taste. Fitness is the great originator of novelty and beauty, and the fundamental principle of taste.

To those indisposed to venture so far from the beaten track, I would suggest, as a fit model, the early palatial style of modern Italy; the most original style of modern times; for it was one of impulse more than study. But, when I propose it as a model, I mean only in spirit: I would have no measuring, I would have no curious imitation of detail. In the present instance, the proportions ought to be the result of the purposes of the structure, and the application of the true principles of art to any plan of construction employed: the detail ought to originate in the natural suggestions of circumstance and fitness; and then alone can it possess that harmonious accordance with the plan and elevation of the edifice, which is the true test of propriety and beauty.

Time obliges me to conclude abruptly; but I intend, at a future time, to offer a few more remarks upon this interesting subject.

London, Feb. 1838.

REVIEWS.

ART. I. *The History and Description, with graphic Illustrations, of Cassiobury Park, Hertfordshire, the Seat of the Earl of Essex.* By John Britton, F.S.A., &c. Folio, 32 pages and 22 plates. London, 1837.

THIS is a splendid work, uniting at the same time accuracy, elegant taste, and usefulness. It is splendid as a whole, from the number and large size of the plates, and the artistical excellence which they display; it is elegant, from the lightness and clearness of the page, and the airy vignettes with which it is illustrated; it is most accurate in its architectural details, the engravings being all from drawings by eminent artists; and, finally (and this is what enhances the value of the book more to us than anything else), it contains a number of ground plans

of commodious cottages, for the keepers of gates and lodges, bailiffs, gamekeepers, woodmen, and other labourers and officers, usually to be found on an extensive estate. The plans of these cottages are not only exceedingly convenient, but the elevations are singularly picturesque: they are favourite objects with the present earl. Some of them, it is said, have been built from his designs, and they are always kept in the highest order. We shall notice them again when giving an account of the contents of the work.

The dedication is to the venerable earl, whom Mr. Britton first met, in the last year of the last century, at Hampton Court, in Herefordshire. In the preface, which is introduced by a beautiful vignette of the Swiss cottage, the dignity and utility of the study of topography are pointed out, and the author's obligations are stated, and thanks given, to the different persons from whom he received assistance. The Earl of Essex generously presented him with the copperplates, mostly of folio size, and no fewer than twenty-two in number; and this circumstance accounts for the low price at which Mr. Britton is able to afford this work: for, had the copperplates, and the drawings from which they were executed, been paid for by the author, the price must have been fifteen or twenty guineas, instead of five guineas. The contents show that the work consists of three chapters:—1. Local History; 2. Memoirs and Pedigrees; and, 3. Description of Modern Cassiobury. The list of illustrations comprises twenty-two copperplates, from drawings by Turner, Pugin, Hunt, Billings, Edridge, Villiers, Alexander, and others; and engraved by Hill, Havell, Lewis, Scriven, &c. The woodcuts are thirteen, all by eminent artists, and principally engraved by S. Williams. The list of subscribers, which is considerable, consists chiefly of architects, artists, and booksellers; at the head of which, however, is the Duchess of Kent, and various dukes, earls, marquesses, and lords.

Chap. 1. is introduced by a most elegant vignette of Thorn Cottage. This chapter is entitled, "On Local History."—The Cassii, Cassio, and Cassio-bury.—Julius Cæsar and Cassibelanus.—Connexion of Cassio with Verulamium, and with St. Alban's Abbey.—History of the Manor. This is an extremely interesting chapter, though the subject of it is foreign to that of this Magazine. Cassiobury is supposed to have been the residence, or rather habitat, of Cassibelanus, the head of a tribe of aboriginal Britons, mentioned, in Cæsar's *Commentaries*, as a man of importance. In point of antiquity and celebrity, therefore, Cassiobury can hardly be equalled by any other place in Britain. Cassiobury first became private property in the time of Henry VIII., who granted the manor of Cassio to Sir Richard Morrison, Knight, who greatly improved the place,



which was afterwards completed by his son, Sir Charles Morrison, who died in 1599. "On the marriage of Elizabeth Morrison, the only surviving child of Sir Richard's grandson, the family property passed to her husband, *Arthur Lord Capel*; from whom the present possessor of Cassiobury is lineally descended." (p. 15.) The tail-piece to this chapter is an exquisitely engraved woodcut of Cassio-bridge Cottage.

Chap. II. is introduced by a vignette of Russel Cottage, built with wooden framework, filled in with brick plastered over. It is entitled "Brief Memoirs," with pedigrees of the Morrisons and the Capels, lords of the manor of Cassio. The tail-piece exhibits a view of Ridge Lane Cottage, of which, through the kindness of Mr. Britton, we are enabled to give a fac-simile impression. (*fig. 42.*)

Chap. III. is introduced by Great Beech Tree Cottage, a thatched structure, comparatively simple in its outline, as all thatched structures ought to be; thatch being a material altogether unsuitable for acute angles. This chapter is entitled "Topographical Description of Modern Cassiobury," with accounts of the park, the gardens, the house, and its pictures, the cottages, lodge, &c.

Cassiobury, as described in the two preceding chapters, is associated, more or less, with the Britons, at war with, or oppressed by, the Romans; of Saxon vassalage; of Catholic aggrandisement, and its long reign of supremacy, and by the

important revolution effected by the suppression of monasteries : but Cassiobury, in this third chapter, presents a scene of domestic peace and rural beauty. "It sparks, woods, lawns, and waters; its floral and horticultural accompaniments; its mansion, stored with choice productions of art and literature; and the serenity and general comfort which pervade the whole; cannot fail to produce deep and salutary impressions on the philanthropist and philosopher." (p. 25.) The park is first described, and next the house, then the gardens, next the cottages, and, lastly, the family monumental chapel at Watford.

We shall extract what is said on the subject of cottages, and add the ground plans of some of them, the woodcuts having been kindly lent us by Mr. Britton.

COTTAGES.

"In different parts of the park and grounds, are various cottages and lodges, which are distinguished at once for their exterior picturesque features, and for the domestic comfort they afford to their humble occupants. Unlike the ragged wretched sheds and hovels which are too often seen by the road side, and even in connexion with some of the large and ancient parks of our island, the buildings here delineated are calculated to shelter, to console, and gratify the labourer after his daily toil, and to make his wife and family cleanly and diligent. Were the mechanics and work-people of large manufacturing towns, and the peasantry (our "country's pride") provided with better and more comfortable habitations than are generally allotted to them, the debasing and ruinous gin-shop and public-house would be less frequented; and ragged impudent children would not so constantly infest our streets and public roads. The cottage at Cassiobury have been designed with the twofold object of being both useful and ornamental. They are occupied, exempt from rent and taxes, by men and women who are employed by the noble landlord in various offices about the park, the gardens, and the house; thus the park-keeper, a game-keeper, a shepherd, a lodge-keeper, a gardener, a carpenter, a miller, a lock-keeper, &c., are accommodated."

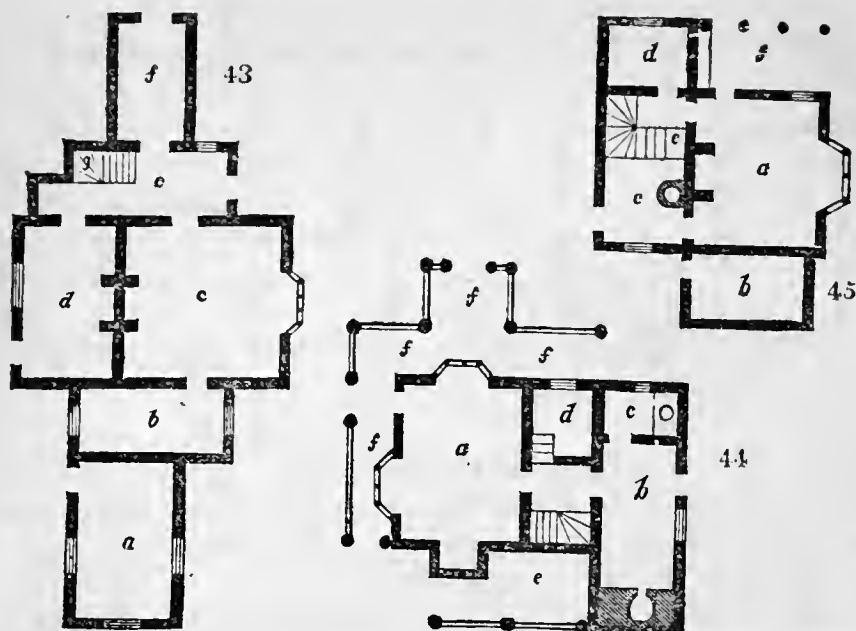
In the interior arrangement of these cottages, most of them contain a porch, a sitting-room, one or two bedrooms, and a wash-house, with an oven and copper.

Fig. 43. is a ground plan of the park-keeper's cottage, in which *a*, is a slaughterhouse; *b*, a dairy and larder; *c*, a sitting-room; *d*, kitchen; *e*, entrance; *f*, porch; and *g*, staircase.

Fig. 44. is a ground plan of Thorn Cottage, in which *a* is the sitting-room; *b*, bakehouse and scullery; *c*, *d*, cellar; *e*, shed over well; *f*, porch and covered-way.

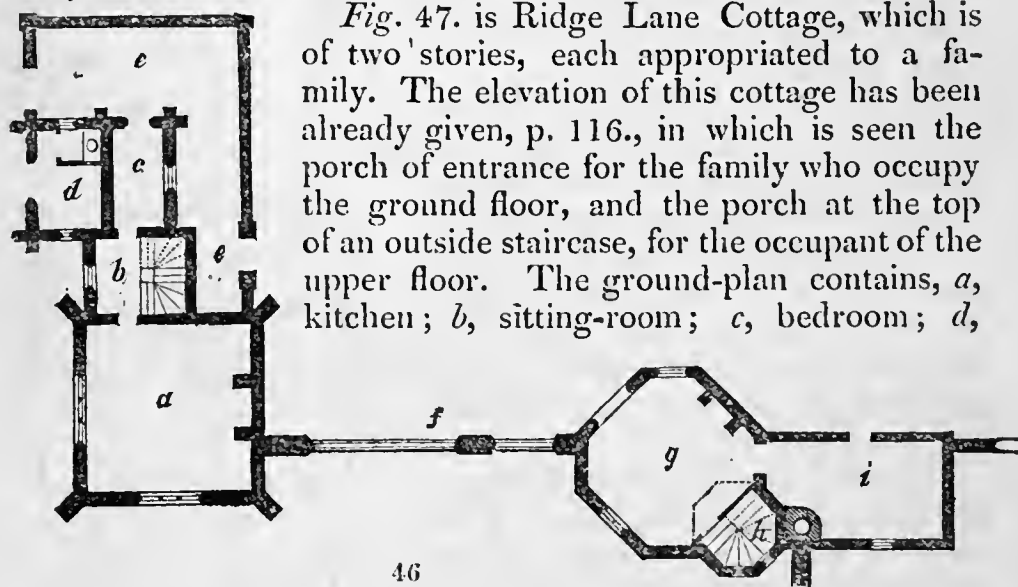
Fig. 45. is the shepherd's or keeper's lodge, in which *a* is the sitting-room; *b*, wood-house; *c*, wash-house and oven; *d*, pantry; *e*, staircase; *f*, porch.

Fig. 46. is the entrance lodge for two families, in which *a* and *g* are sitting-rooms; *b*, staircase; *c*, entrance; *d*, wood-house; *e*, passage with dwarf wall; *f*, gates; *h*, staircase; *i*, wash-house. This cottage forms the lodge to the London entrance, and is understood to have been partly the design of Wyatt, and



partly of the earl. It certainly forms a very handsome group. The massive gates are hung with Collins's hinges, and move so easily, that they may be opened or shut by a child.

Fig. 47. is Ridge Lane Cottage, which is of two 'stories, each appropriated to a family. The elevation of this cottage has been already given, p. 116., in which is seen the porch of entrance for the family who occupy the ground floor, and the porch at the top of an outside staircase, for the occupant of the upper floor. The ground-plan contains, *a*, kitchen; *b*, sitting-room; *c*, bedroom; *d*,



wash-house, oven, &c.; *e*, pantry; *f*, staircase to a floor for another family; *g*, porch.

Fig. 48. is a plan of Great Beech Tree Cottage, which, being of larger extent than the others, and highly ornamented exteriorly, may be considered in the light of a cottage *ornée*. It has five rooms on the ground floor, and others up stairs. The ground plan contains, *a*, sitting-room; *b*, bedroom; *c*, porch and passage; *d*, sitting-room; *e*, housekeeper's room; *f*, pantry; *g*, cellar; *h*, back entrance; *i*, kitchen; *k*, porch.

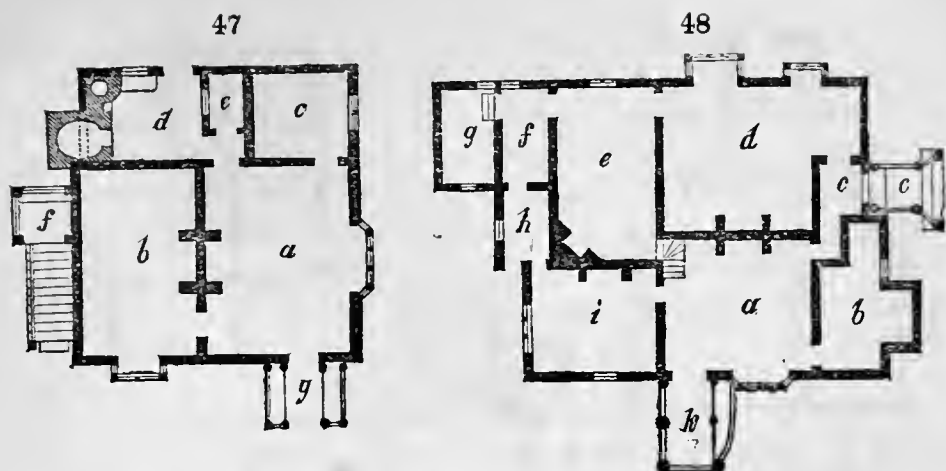
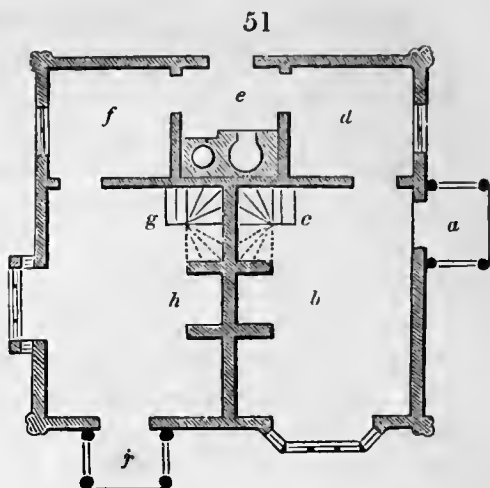


Fig. 49. is called Russell Farm Lodge, and is erected at the entrance to Russell Farm, by the side of the public road, between Watford and Berkhamstead. Russell Farm is occupied by General Sir Charles Colville, Bart., who rents it from the Earl of Essex. The ground plan contains, *a*, back porch; *b*, kitchen; *c*, sitting-room; *d*, bedroom; *e*, wash-house, &c.; *f*, front porch with seat.

Fig. 50. is Russell Cottage, for two labourers' families. The ground plan contains, for the one cottage, a porch (*a*), sitting-room (*b*), staircase (*c*), wash-house (*d*), and oven and copper common to both cottages (*e*). The other cottage contains a wash-house, communicating with a room containing the common oven and boiler; a living-room (*h*), stairs to the bedroom (*g*), and porch (*j*).

Fig. 51. is Cassio-bridge Cottage, for two labourers' families. The walls of this cottage are covered with split hazel, and other rods, the flat side being applied to the walls, and the bark exhibited externally to the weather and the eye. The pieces are all of the same diameter, but of different lengths; and they are arranged so as to throw the surface into panels, variously composed, in the manner of the Duke of Marlborough's garden structures at White Knights. The ground plan of each of these cottages shows exactly the same accommodation as in the Russell Cottage; viz., two porches (*a j*), two living-rooms (*b h*), two stairs (*c g*), two wash-houses (*d f*), an oven and boiler room common to both houses (*e*).

The gardens and grounds at Cassiobury are delightful, on account of their natural beauties, the magnitude and picturesque forms of the mansion, and the artificial scenery of the gardens which adjoin it; but for the general air of comfort which pervades every part of the estate, the appearance of cleanliness, order, and high keeping in the park, which is so strongly impressed on the mind of the stranger, we think it is more indebted to these cottages than, perhaps, to any other feature. Perhaps the only useful addition that could be made to the interior of such dwellings would be one of Arnott's stoves to each.



ART. II. *On Warming and Ventilating; with Directions for making and using the Thermometer Stove, or self-regulating Fire; and other new Apparatus.* By Neil Arnott, M.D., F.R.S., &c., Physician Extraordinary to the Queen, Author of the "Elements of Physics," &c. 8vo, pp. 138. London, 1838.

WE are much mistaken, if Dr. Arnott's stove is not by far the best substitute that has yet been proposed for an open fireplace. We say this, not alone from having perused the work before us, and seeing the stoves at the manufacturer's, but from the experience of a gentleman at Bayswater, who (though we did not know it till quite lately) has had one of these stoves in operation for upwards of six months, and has experienced all the advantages from it set forth by its inventor. We entered the rooms heated by it on a very cold day, and found the temperature delightful. Fuel was only supplied twice a day, and no stirring it with poker or tongs ever given between. It was placed in the back room of the parlour floor: it heated that room and the front room; and, when the parlour doors were opened, it heated the whole house, the thermometer opening the regulator so as to accelerate the burning of the fire, and produce the extra heat required. Dr. Arnott's stove has the great advantage over Mr. Joyce's, that any sort of fuel may be burned in it. In short, it differs chiefly from a particular kind of German stove, in which the fire is burned in an isolated furnace within a casing of sheet iron; and from the Bruges stove, in which the fire is burned in an isolated grate within a casing of cast iron; in having the self-regulating thermometer. As an

invention, however, it is much more likely to come into general use from its being an improvement on preceding inventions, than if it had been in every respect original. The Bruges stove, figured and described in the *Encyclopædia of Cottage Architecture*, and also in the First Volume of this Magazine, may be considered as the prototype of Dr. Arnott's stove, adapted for cooking. It is a most excellent stove for both purposes, and, notwithstanding the prejudices against stoves among English cooks, we are rather surprised that it has not come into more general use. It would save as much in the kitchen, as Dr. Arnott's stove would save in the parlour.

Before describing the thermometer stove, we shall give a short notice of the treatise relating to it. This treatise is the substance of a lecture delivered at the Royal Institution in March, 1836. It was not published sooner, because it was desirable to have to report the result, not of one or two experiments only, but of many; and, in consequence of more extended experience, to be able to make evident to popular apprehension those popular misconceptions and prejudices which have hitherto prevented the introduction of better modes of heating. Every man, who has anything of the feeling of a tradesman about him, will naturally say, "Why did not Dr. Arnott take out a patent for his invention? he would have made a fortune by it." Undoubtedly he would; but Dr. Arnott had much nobler views, and has made a fortune of an infinitely more exalted kind than it is in the power of money to produce. We cannot introduce this subject better than in Dr. Arnott's own words:—

"My reason for delivering the lecture before I had the book fully prepared, was, that, as I had decided not to reserve for myself any patent right in the new apparatus, I might, by having numerous competent witnesses of what I had proposed and accomplished, prevent other parties who might hear of my processes from appropriating them by patents, and thus coming between me and the public.

"Because several of the new means, and particularly the thermometer stoves, are of the nature of the things for which patents are usually taken, friends had urged me strongly to follow the custom; representing that the legislature of this country has devised the patent alone as a mode of remunerating the proposers of useful inventions; and that many honoured names, as lately, of Watt, Arkwright, Wollaston, &c., are in the list of those who have profited by the law; and further, that, in the case of the stove, it would be an advantage to the public, that I should retain the right of naming the persons allowed to manufacture it, thereby to prevent such disappointments from imperfect workmanship as happened in some cases with regard to my hydrostatic bed, and other suggestions strictly professional.

"I had decided not to take the patent; because the stove was originally planned as a means of preventing and curing diseases, purposes for which it will always be important, whatever other advantages be derived from it; and in this country it is usual for members of the medical profession to make an offering at once to the public of any means for the benefit of the general health, which they may discover or devise, without stipulating for private advantage. Then, although I believe I might have better served the public

by keeping control over the sale of the floating bed, I think, in regard to the stove, that the construction and management will by this publication be rendered so intelligible to all, that mistakes can scarcely happen; and it is likely that the wide competition among the talented men about to engage in the manufacture will sooner lead to the adoption of the best and cheapest forms and construction than if the business had remained in fewer hands.

“ Since I gave my lecture, and publicly described the thermometer stove, I have heard of various supposed improvements on it, and substitutes for it, which, however, have only proved how little the subject was understood, either by the persons who could make such proposals, or the portions of the public which could entertain them.”

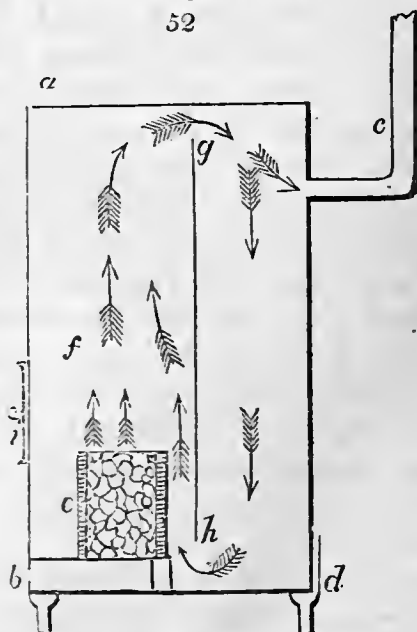
In the introduction, the author illustrates in a popular manner the four conditions of health to man; namely, “fit air, warmth, aliment, and exercise of his bodily and mental faculties.” “The total want or privation of the four necessities quickly extinguishes life.” “Mismanagement in regard to the four necessities produces disease and premature death.” “While faulty management in regard to the four necessities is thus the chief cause of the great mass of diseases, peculiarly modified management of them becomes the chief part of the cure of all diseases.” “The four necessities, with poisons and violence, are the primary or original sources of human pleasures and pains, and the great motives of human actions.” “The knowledge of some of the truths above announced has been slowly acquired by man.” The educated members of civilised communities possess this knowledge; and the object of Dr. Arnott’s work is “to render the knowledge on the subjects of ventilation and warming, which now exists among the learned, familiar to all, and to introduce to public notice new and simple means of securing the ends in view.” (p. 13.) The author next treats of ventilating and warming generally, and afterwards gives a history of heating apartments by fires in a chimney, by close stoves, by steam, by hot water, and by hot air; and, having thus given a popular and instructive sketch of the chief means which were used for warming and ventilating up to 1834, he proceeds to describe the self-regulating fire or thermometer stove. His attention was drawn to the subject of “controlling temperature, for the purposes of health and comfort,” by various professional occurrences which took place in that year. The subject had before engaged his attention, but he now set before him the problem, “To secure effectually, in any part of the world, and at all seasons, the temperature, moisture, and purity of atmosphere most congenial to the human constitution.” After setting up an apparatus in his library, and making various experiments, the idea of a box of water “heated not by communication with a distant fire, but by a small fire within itself” (such as is used for heating portable baths), occurred to him.

“This constituted a water-clad stove; and, as the steam of the water, when heated to the boiling point, passed, by an aperture provided, into the chimney,

the external surface of the box could never be hotter than boiling water, and could no more, therefore, vitiate the air of the room than the simple water-box did. To prevent the water from boiling too rapidly, and being wasted, the air, to feed the combustion, was admitted only by a small aperture near the door of a close ash-pit, in which aperture was placed a throttle-valve, regulated by a peculiar thermometer, which will be described in a future page. The aperture was closed by the thermometer whenever the temperature reached the boiling point, or any other point that might be chosen, and was opened again whenever the thermometer fell to below the point chosen. This stove, besides its uniform moderate temperature (for it was a box of boiling water, which, although giving out heat, never cooled), had nearly all the economical advantages of the close German or Dutch stove; for so much of the chimney-flue might be exposed in the room as to apply usefully nearly all the heat of the smoke. There was here, however, still an apparatus rather difficult to make, and expensive, liable to be out of order, heavy, requiring considerable attention from servants, &c. It may be mentioned, however, that several forms of the water-clad stove may still be useful.

“After the step made by the construction of the stove just described, it was easy to make another and more important step. The object sought was now clearly seen to be, merely to place in any apartment the required extent of metallic surface, kept steadily at a temperature not exceeding 200° of Fahrenheit. It evidently was of no importance what hot fluid filled and warmed the vessel (whether water, steam, oil, or air, or whether there were an included fire), provided the temperature of the surface was maintained; for the box in any case would be quite close, permitting no escape of its contents. If, therefore, in a box of the required size, a fire could be placed so as to warm the box with perfect uniformity all around, while the fire itself was so controlled by a self-acting regulator, that it should burn always exactly as fast as was required to keep the box steadily at any desired temperature, the object sought would be attained, and there would be many concomitant advantages of cheapness, simplicity, &c. These words have sketched the *self-regulating fire* or *thermometer stove*, of which the form first tried is now to be described more particularly by aid of the woodcut.

“The outline *a b d c* (*fig. 52.*) represents a box formed of sheet iron, and divided by the partition *g h* into two chambers, communicating freely at the top and bottom. The letter *e* marks the fire-box or furnace, formed of iron, lined with fire brick, and resting on a close ash-pit, of which *b* marks the door, and near which door there is a valved opening, by which air enters, to feed the fire when the door is shut; *i* marks the door of the stove, by which fuel is introduced; *c* is the chimney flue. While the stove door and ash-pit door are open, a fire may be lighted, and will burn in the fire box just as in a common grate, and the smoke will rise and pass away by the chimney, mixed with much colder air, rushing in by the stove door; but, if the stove door and ash-pit door be then closed, and only as much air is admitted by the valved opening in the ash-pit as will just feed the combustion, only a small corresponding quantity of air can pass away by the chimney, and the whole box will soon be full of the hot air or smoke from the fire circulating in it, and rendering it every where of as uniform temperature as if it were full of hot water. This circulation takes place, because the air in the front chamber around



the fire-box, and which receives as a mixture the red-hot air issuing from the fire, is hotter, and therefore specifically lighter, than the air in the posterior chamber, which receives no direct heat, but is always losing heat from its sides and back ; and thus, as long as the fire is burning, there must be circulation. The whole mass of air is, in fact, seen to revolve, as marked by the arrows, with great rapidity ; so that a person looking towards the bottom of the stove, through the stove door *i*, might suppose, if smoking fuel had been used to make the motion visible, that he was looking in at the top of a great chimney. The quantity of new air rising from within the fuel, and the like quantity escaping by the flue *c*, are very small, compared with the revolving mass. There remains to be noticed only the thermometer regulator of the combustion. Many forms presented themselves to my mind, as described in the section on the manufacture of the stove, any one of which will close the air-passage, slackening or suspending the combustion at any desired degree, and will open it again instantly, when the temperature falls below that degree.

“ I had thus a simple box of iron, of cheap and easy construction, answering all the purposes of expensive steam or hot-water apparatus, burning its fuel as steadily and regularly as an argand lamp burns its oil, or as an hour-glass lets its sand run through ; and allowing me, by merely touching a screw on the thermometer, rapidly to increase or diminish its heat, as by touching another regulating screw we increase or diminish the light of a lamp.

“ What chiefly surprises a stranger in this new stove, is the very small quantity of air required to support the combustion which warms a large room : the whole might enter by an opening of half an inch diameter, and the quantity of air or smoke which passes into the chimney is, of course, proportionally small. These facts at once suggest how small the consumption of fuel must be, as that depends on the quantity of air entering ; how perfect the combustion of the fuel must be where so little is expended ; and how completely the heat produced in the combustion must be turned to account. The combustion is so perfect, because the fuel is surrounded by thick fire-brick, which confines the heat so as to maintain intense ignition ; and the saving of heat is proved by the rapidly diminishing temperature of the flue, detected by a hand, passed along it from the stove. During the winter 1836-7, which was very long and severe, my library was warmed by the thermometer-stove alone. The fire was never extinguished, except for experiment or to allow the removal of pieces of stone which had been in the coal ; and this might have been prevented by making the grate with a moveable or shifting bar. The temperature was uniformly from 60° to 63°. I might have made it as much lower or higher as I liked. The quantity of coal used (Welsh stone coal) was, for several of the colder months, six pounds a day (less than a pennyworth), or at the rate of half a ton in the six winter months. This was a smaller expense than of the wood needed to light an ordinary fire ; therefore, the saving was equal to the whole amount of the coal merchant's ordinary bill. The grate, or fire-box, fully charged, held a supply for twenty-six hours. It might have been made twice as large, or to hold a supply for two days, and there would have been no waste, as the consumption is only proportioned to the air allowed to enter ; but, in general, it may be convenient to have to look at and charge the fire in the middle of the day and at bed-time. Many strangers coming into my room did not suspect that I had fire in the stove, for it was used generally as a table for a book-stand. They thought the agreeable warmth of the room came from the kitchen, or some neighbouring room. I believe that persons must themselves feel to be able truly to conceive the charm, in dreary winter, of knowing, wherever they be, in cold, or rain, or snow, that a perfect and unvarying summer room always awaits their return home.

“ The thermometer stove, as compared with other modes of warming, will be best understood by reviewing its chief qualities. A general expression

for them is, that it possesses all the advantages of steam or hot-water warming, with many advantages peculiar to itself."

The particular advantages are: *Economy of Fuel*. A common open fire wastes seven eighths of the heat produced; but Dr. Arnott's stove does not allow the air, which has fed combustion to escape until it is deprived of nearly all the heat; and it does not allow any of the warm air of the room, except the little which feeds the fire, to escape through the chimney. To render palpable the difference of effect between fuel consumed in an open fireplace and fuel consumed in a close stove, set fire to a sheet of paper in each. That in the stove will warm it, as if boiling water had been poured into it, and the heat will be given off into the room; while that in the open fireplace will produce no sensible effect in the room. One eighth of the fuel which is needed for a common fire suffices for a thermometer stove; and stone coal, or anthracite, coke, and even cinders, in a word the cheapest fuel, answers better than that which is dearer.

Uniform Temperature is obtained in all parts of the room throughout the day, and throughout the night also, if required.

The Stove is always alight, by which the temperature of the place warmed is uniform, and much fuel is saved. "More fuel would be wasted in one morning hour, by the attempt suddenly to raise the temperature of a room which had become cold in the night, than by keeping the fire burning moderately all the night."

No Smoke can come from the stove, or dust; there is no danger to persons approaching it; no danger to property by live coal being shot from the fire. Obedience to command is another advantage, the screw of the regulator as certainly increasing or diminishing the temperature as the screw of a lamp varies the light. An open fire is often the master of the attendant, but a child may manage the stove without failing.

"*The trifling original Expense*, compared with the cost of apparatus for warming by steam, hot water, or distributed hot air, and as compared even with a good open grate and fire-irons. The saving of fuel in one winter would nearly pay for the stove.

"*The small Expense of Attendance upon it*; whereas, if a common fire is to be kept burning, there must be some person to watch it; and, if there be several such fires, the servant will be almost constantly employed passing from room to room.

"*It is easily moved*, after the chimneys are prepared, from room to room, or house to house, nearly as a large chair, or a chest of drawers, may be moved.

"*Graceful Form*. It may be fashioned to please the fancy; as a pedestal, vase, urn, pillar; even a statue, or indeed, may be of almost any beautiful form.

"*It is a good Cooking Stove*, and, therefore, the poor man's stove.—A second small iron box placed within it, with a door opening outwards through the

side of the stove, is a perfect oven; as is proved, indeed, by the common American stove, described at art. 31., which in this respect resembles it. A small kettle or cooking vessel may be placed directly on the fire. Potatoes and other things may be roasted in the ash-pit; and, if the ash-pit be made large, with the fire-bars sloping, so as to present a considerable surface of naked fire looking downward and forward, meat may be roasted there. The top of the stove is a perfect hot plate, on which anything may stand, either to be heated or to be kept warm. If the stove be heated to the boiling point of water, a tea-pot of cold water placed upon it, under a dish cover, soon contains boiling water; and similarly eggs or other things may be boiled. Thus the breakfast of a solitary student in London chambers may be easily prepared by himself.

"No Sweeping Boys are required, as already explained.

"The advantages hitherto enumerated of the stove, in its domestic bearing, might be otherwise classified under the heads of Economy of Fuel, Economy of Original Expense, Economy of Service, Economy of Comfort, Economy of Health and of Life, Economy of Furniture and Property generally, and Economy of Time.

"There is one circumstance connected with this stove, as used in a sitting-room, which may at first by some be deemed a disadvantage; namely, that the fire is concealed from view. But that the English feeling on this subject is merely an accident, is proved by the contrary feeling existing as strongly elsewhere, as in Northern European and some American countries. While the Englishman dreads losing his cheerful hearth or fireside because of his pleasing associations with it, people on the Continent dread having such a fire, because their experience tells them that the open fire is accompanied by cold draughts, discomfort, and danger, which do not attend the close stove; and, if the Englishman himself would, in summer, fly from a fire as an insufferable object, he may soon, in winter, when the thermometer stove makes a summer for him, cease to desire it. It is possible, however, to have an open fire, with many of the qualities of the stove, as will be shown in a future paragraph.

"Another objection likely to be made by person before reflection, is, that they would be rendered very susceptible of cold by living in rooms always heated to about 60°. Now, the temperature of 60° is in most countries the medium equally distant from the extremes of heat and cold, which persons may permanently use, or may approach or leave, with perfect safety. The danger of catching colds or heats is on entering or leaving rooms with open fires, heated, as they often are, to 70° and more, or cooled to 50° and below."

The author next recurs to the subject of ventilation; and, on this point, we think the use of his stove, as a substitute for open fireplaces, will be most liable to objections. We have little doubt that, were people once accustomed to it, the current of fresh air introduced by the draught of the stove fire, and the change of air produced by opening and shutting the door when persons came in or went out of the room, with the air introduced through crevices in the windows, doors, &c., would be sufficient for health; but, after having been accustomed, for the greater part of our lives, to that perpetual change of air, which takes place in the case of an open fireplace, it may reasonably be doubted whether the sudden change to the air of a room heated by a close stove might not have some unpleasant effects. Judging from our own experience, having passed a winter in Petersburg, some spring months in Sweden and the north of

Germany, besides several winter months in the south of Germany and in France, we should say that the change from open fireplaces to close stoves, with an ordinary degree of intercourse between the rooms and the passages of a house, would be attended with no bad effects whatever; but, by a number of persons in this country, the matter will, we have no doubt, be viewed differently. If we live till next winter, we shall substitute the Bruges stove for an open fireplace in our kitchen, and try Dr. Arnott's stove and Mr. Joyce's in sitting-rooms and bedrooms, and let our readers know the result after six months' experience. In the mean time, let us hear what Dr. Arnott states on the subject of ventilating common rooms.

"Sufficient ventilation for an ordinary sitting-room will be insured, in a cold winter day: 1st, by the demand of air for the combustion in the stove; 2dly, by the considerable change occurring through the crevices around doors and windows, which may be taken at about six cubical feet a minute for each; and, 3dly, by the hundreds of gallons of fresh air, which, every time the door is opened, enter and displace an equal quantity of the air previously in the room. In warmer weather, when the difference between the external temperature and that of the room is less, and there is, therefore, less tendency to spontaneous change, some additional means may be used from among those to be described hereafter. But the three already mentioned have so considerable an effect, that, even in Russia, where they are the only means in common operation, and where they are counteracted very much by double doors and windows, and the closest fittings every where, in rooms without an open fireplace, and heated entirely by the action of stoves which are fed with air from the lobbies or passages, they still are sufficient. This is proved by the ruddy healthy countenances and long lives of the persons dependent upon them."

The remainder of the work we must pass over, as chiefly entering into details on warming and ventilating large buildings, and for the construction of the stove by those who intend to manufacture it. We have done enough, we trust, to induce every architect and builder, and, indeed, we might say, every reader, to procure the work and study it. Even on the general subject of heat, air, and ventilation, as connected with health, the work will richly repay perusal. Every subject on which Dr. Arnott touches in this work, on *warming and ventilating*, is treated of in so clear and satisfactory a manner, and so totally devoid of technicalities, that, like *The Elements of Physics*, it forms a most delightful piece of reading from beginning to end: the more delightful, because every line of it can be applied by the reader to some useful purpose.

The stoves are manufactured by Messrs. Bramah, Cottam and Hallen, May and Moritt, Mr. Huxley, and others. The present price, we believe is from 3*l.* to 10*l.*: but, we trust, by competition, it will soon be less, so as to render the stove available to the journeyman mechanic and the common labourer, both in town and country. We would suggest the idea of manufac-

turing some for warming only, and others for heating and cooking; some for being regulated by a thermometer, and others (for country labourers) without thermometers, for being regulated by hand. The trouble of hand regulation would be nothing, in comparison with that which is at present required for keeping up a fire in a common open fireplace.

It is a laudable practice of many benevolent persons in different parts of the country, to join in subscriptions for supplying the poor with coal, blankets, &c., during the winter. We would suggest that, in addition to this kind of association, societies should be formed for raising subscriptions to assist meritorious poor men in purchasing Arnott's stoves, fitted up in such a manner as to serve at once for heating and cooking. Were some influential persons to take up this subject, and pursue it with the ardour which is frequently evinced in the case of political or scientific societies, the quantity of good that would be effected throughout the country is incalculable. Thousands of cottages, from being cold and miserable abodes in the winter season (though a considerable quantity of fuel is burned in them), would, with one eighth part of that fuel, be rendered warm and comfortable; and the heat produced would not be confined to the kitchen or sitting-room, but would rise up to the bed-rooms, and, in short, be diffused over the whole house. Many country gentlemen give their cottagers Christmas presents; such as a load of coals, sacks of potatoes, meal, flour, blankets, &c.: we would suggest, as a present likely to be of permanent advantage, one of Arnott's stoves, or a proportion of the cost of one, or the loan of as much as would purchase one, to be paid back by instalments. We are aware of the prejudices that exist among the labouring classes against improvements, especially those that require anything like nicety of management: but let it be remembered that a new generation is coming into action; and, besides, that in every part of the country, and among every class of labourers, there are always some less prejudiced than others. Let these be tried first; let the carpenter, the smith, the mason, and the gardener, be offered stoves, with directions how to use them, and the result will, in time, induce their neighbours to follow their example. One feature in this stove will prejudice many against it as an article for the poor man, and that is the thermometer; but the thermometer, we contend, is not an essential part of the stove, because the same regulation produced by it may be produced by hand; and it cannot be much trouble to turn a register one way when the room is too hot, and another way when it is too cold; say even a dozen times a day. As we have just observed, this would be nothing to the trouble attendant on a common fireplace.

ART. III. *The Churches of London : a History and Description of the Ecclesiastical Edifices of the Metropolis.* By George Godwin, jun., Architect, Associate of the Institute of British Architects ; Assisted by J. Britton, F.S.A., &c. The Illustrations by Robert William Billings, Associate of the Institute of British Architects. Nos. 11. to 14. 8vo. Price 1s. each.

THIS cheap and truly beautiful work continues to appear regularly ; and, though we are generally inclined to think the last number the best, yet we certainly have no hesitation in expressing that opinion with respect to the fourteenth number. The fifteenth number, for March, contains the following interesting notice of Inigo Jones, who, it appears, was buried in St. Bennett's church, Paul's Wharf : —

"It appears from the register books here preserved, that the celebrated architect Inigo Jones, who may be deemed the first professor that introduced pure Italian architecture in England, was buried in this church ; and, as it is our desire in tracing the history of the metropolitan churches, to connect them with as many events which relate to the alterations that have occurred in London, to the progress of improvement, and to the good and great of our species, as may be practicable (and thereby to increase the interest which they must of themselves possess in the estimation of their frequenters), we scruple not to avail ourselves of the circumstance, and sketch briefly the principal events of his life.

The father of Inigo Jones appears to have been in indifferent circumstances, and apprenticed his son, when young, to a joiner. While with his master, however, he displayed so much skill as a draughtsman, that he attracted the notice of William Earl of Pembroke, and was sent by that nobleman to Italy, to improve his taste, and acquire knowledge. Here he quickly gained so good a reputation, that Christian IV., King of Denmark, appointed him his architect ; and, when the sister of that king married James I. of England, Jones came into this country, and received an appointment from her. About 1612, he again visited Italy, and, on his return, was made Surveyor-General to the king ; and designed several buildings which were erected in London and various parts of the country.

In the reign of King Henry VIII. pointed style of architecture declined in England ; the simplicity and beauty which characterised it in its best state had given way before a redundancy of ornament heaped upon it, through a craving for novelty on the part of its professors, and want of skill legitimately to gratify the desire. Artificers capable of executing works similar to those with which, up to that time, England had been adorned, began, too, to fail ; and when, through the exertions of travellers, examples of Italian mouldings and ornaments were imported, they, being easily imitated, were eagerly adopted, and were used for some time indiscriminately with the forms of the last period of "Gothic" architecture. In 1566, we find at Caius College, Cambridge, small Roman Doric or Tuscan columns ; and, at the commencement of the seventeenth century, we see the five "orders," as they are termed (or so many varieties of columns) piled one above another on the face of the Schools tower at Oxford ; but, previously to the time of Inigo Jones, there were no buildings designed entirely in accordance with the revived principles of Italian architecture ; nor was there any great improvement observable in the style of domestic buildings in London. As among the best known of his numerous designs, we may mention the Banqueting House, Whitehall, intended to form a portion of a magnificent and most extensive palace, designed

by him for King James I. but never executed; a portion of Greenwich Hospital; Coleshill House, in Berkshire; the chapel of Lincoln's Inn; and St. Paul's Church, Covent Garden, which is more singular than beautiful; and, although (since the investigation of the remains of Grecian architecture, from which arose that of Rome, has taught us the value of simplicity, and the beauty of breadth of parts) we cannot express that admiration for them which they once excited, we must nevertheless, extol the inventive powers which he possessed, and the taste which guided them. At that time, the monuments of Greece had not been examined, nor indeed were the remains of Rome's former magnificence so well known then as those of the former country are now, through the labours of Stuart and Revett, Donaldson, Wilkins, and others.

In his admiration of classic art, Jones sometimes allowed his judgment to sleep, as was the case when he affixed to old St. Paul's Cathedral, which was in the pointed style of architecture, a Corinthian portico; and again, when he laboured to prove, that Stonehenge, on Salisbury Plain, was a Roman temple: but for these mistakes, and some others, he may readily be pardoned.

The latter part of his life was much disturbed, in consequence of the civil dissensions during the reign of King Charles I., with whom he was a great favourite. Being a Catholic, he was called on to pay a heavy fine in 1646, and it is supposed that the mortifications he endured hastened his death, which took place in 1651. He was about eighty years old when he died.

ART. IV. *Catalogue of Works on Architecture, Building, and Furnishing, and on the Arts more immediately connected therewith, recently published.*

LE KEUX's *Memorials of Cambridge, &c.*, No. IV.

This work may safely be commended for the great beauty of of its plates and wood engravings, as well as for the copiousness of its letterpress, and its very low price. In an early number, we shall review it at greater length.

The Millwright's and Engineer's Pocket Director: comprehending select and useful Prices of Mill-Work, Machinery, Engines, &c.; together with Explicit Calculations, Estimates, Tables, &c., with the Weights of Wrought Iron, Cast Iron, Copper, Brass, &c.: including, also, a variety of Miscellaneous Information of practicable Utility. By John Bennett, Engineer, &c., Author of "Artificers' Lexicon," "Geometrical Illustrations," &c. 12mo, pp. 172.

A useful little work, calculated entirely for the practical man. Among the information not alluded to in the titlepage, is a list of the principal millwrights, engineers, iron-founders, &c., in and about London, which cannot fail to be useful, as well to the working man as to his employer.

Some Account of Mont Orgueil Castle, in the Island of Jersey; its present State, its various Alterations and Additions: with a poetical Description of the Castle, written by William Prynne,

during his Confinement therein, from 1637 to 1646. Pamph. 8vo, 54 pages.

Mont Orgueil Castle may be described as the ruins of a most remarkable fortress; which has figured in history since the beginning of the fourteenth century, but which is said by some to have been erected in the year 1000; and by Julius Cæsar, according to others. The remains of this castle might be well worth the study of the young architect, who might devote a country excursion to it; and, with this pamphlet in his hand, explore its remains, and make a drawing of their restoration. Such a drawing would be extremely interesting and instructive; not as affording a model to copy, but as showing the wonderful resources of the human mind, according to the circumstances in which it is placed.

A Historical Sketch of the Royal Exchange. Chiefly compiled from Stowe and other Authorities. By Samuel Angell, Author of the "Antiquities of Selinus." Pamph. 8vo, pp. 38. London, 1838.

Interesting at the present time from the recent calamitous fire, of which, an account is given at the end, abridged from the *Times* newspaper. In this account, one of the most interesting circumstances connected with the fire is altogether omitted; viz. that, while the flames were raging round the tower, the clock continued going, the chimes playing as usual at twelve, though a few minutes after the bells fell.

Questions relating to Fires in general, the Draught of Smoke, and the Saving of Fuel, dedicated by Permission to Earl de Grey, President of the Institute of British Architects. By F. A. Bernhardt, Architect, Honorary Member of the Polytechnic Society in Leipzig. Pamph. 8vo, 15 pages. London

We have been favoured with a copy of this pamphlet, which, though not published, has been privately circulated. From it, and from another pamphlet of 20 pages, entitled *Certificates*, it would appear that M. Bernhardt has enjoyed considerable repute in Berlin, for improving the draughts of chimneys, and for warming and ventilating. The following is the last of these certificates: —

"At Dusseldorf on the Rhine, a technical construction has been achieved, which, as an invention peculiar in its kind, does much honour to the founder.

"The Royal General Post-Office had built, many years ago, a factory adjoining the post-house for the repair of the mail coaches; and, since the building of the diligences, and the increase of business, it has become a very large coach manufactory, in which about seventy workmen are at present daily employed. In a building at the back, arranged for that purpose, a forge for ten

fires was put up, and erected in the usual form. Smoke and soot penetrated into the dwellings of the neighbours, rendering them uninhabitable, and worth no rent. Complaints arose, and an expensive law-suit, which naturally terminated to the disadvantage of the Post-Office department. Experiments were then made to clarify the smoke, and separate the soot. The Prussian consul in England, that land of invention, was even desired to make enquiries whether any means were known to remedy the evil : but nothing could be done ; and the most learned professional men doubted the possibility of an invention to answer the purpose, because it was believed that any attempt to separate the smoke from the soot would only be made at the expense of the draught. It became a point of consequence to the Post-Office authorities here to satisfy the neighbours at any price, and they continued their endeavours to suppress the nuisance arising from the soot, by removing the smithy into another intermediate building constructed for the purpose, by experiments with such artists as were to be found, in inventing an apparatus by means of which it was hoped to banish the soot. A cistern of water was applied over the roof, which was intended, by being placed round the outlet for the smoke, to absorb its heavier parts ; but the soot soon covered the water with an incrustation, and the finer particles of the soot escaped from the chimney, and filled the gardens of the neighbours ; besides, the smoke spread itself through the smithies in a very dangerous and insupportable manner for the workmen at the fires. At that time, the architect, M. Bernhardt of Saxony, was in Berlin, and had been employed in the Royal Palaces, having devoted the whole of his life to the study of the deficiencies at present existing in the construction of fires. He was then occupied in correcting similar faults in the General Post-Office buildings. His plans were crowned with the best success, and gained him in particular the full confidence of His Excellency Baron Von Nagler, Minister and General Postmaster of the state, from whom M. Bernhardt received the honourable commission of visiting Dusseldorf on his way to Rotterdam, London, Paris, and Vienna, in order to report upon the embarrassing situation of its coach factory. The penetrating intelligence of His Excellency had found in him the right person. M. Bernhardt discovered the means of forcing the draught of the smoke, and separating the soot from it. His plans were carried into execution. *In a short time, without interruption of the coach factory, the work stands completely erected. The smoke ascends in a purified state through two cylinders of zinc on the roof, and the soot remains in the interior of the three story high building, concentrated in separate channels, and chambers for it.*

"It is remarkable to observe the soot depositing itself here in coarse qualities, and afterwards becoming finer as it ascends ; to see the smoke rising through narrow wire nets. In the channels of the five chimneys a mass of $26\frac{2}{3}$ cubic feet of soot was found after three months' purifying, which had formerly been mostly conducted over the roof.

"We would willingly give a more detailed account of the whole arrangement, if the modest inventor, M. Bernhardt, had not reserved the doing so to himself at its proper time, in a lithographic representation. It is his secret and property. The whole is as simple as nature, from whom it has been copied. Air, fire, smoke, are respectively weighed in these premises : its physical rights are left to each, and the problem is solved. After the conversations we had with the technical artist, he displayed other knowledge and experience, equally important for the interest of mankind. He has not only the smoke entirely in his power, but he understands how to construct each kind of fire, and knows the great secret of economising fuel. The health of the inhabitants is a principal point he has in view. That which appears the most extraordinary in him, is the certainty and the self-confidence with which he acts without making trials. His theory, is the practice of remedying evils in all cases. His universal expedient is the air, which he understands how to measure out to fire. He examines the kitchens, rooms, fire-places, and stoves, where required ; the construction of the fires, the sloping of the chimneys, and the upper part of the

same over the roof. A remedy that is applicable in one case would be injurious in another. Fashion, in architecture, attempts sometimes to operate compulsatively on fires. The draught of fires is often too strong or too weak. Often the elements of nature, and architecture itself, and often the self-conceit of architects, tend to oppose that which is invented.

“M. Bernhardt’s chief object in travelling is, to give proofs that his science is true and certain. He will bring to light *the useful* and *the good*, and, by the prosperity of the same, gain the confidence of authorities and the public.

“ (Signed) CARL SCHAEFFER, Professor of Architecture.”

Weale’s Scientific Advertiser. Nos. I. and II., for January 20. and February 5., to be continued on the 5th and 20th of every Month, an Advertising Circular, on a new Plan, expressly designed for the Announcement of Publications connected with Architecture and the Fine Arts, Civil, Mechanical, and Military Engineering, Naval Architecture, and the various Branches of Mathematics and Natural Philosophy. This Advertiser will be printed in foolscap folio, and stamped; and circulated gratuitously by the General and Twopenny post.

In compliance with the suggestions of several of his connexions, and having himself long been sensible of the inconvenience felt by those whose occupations attached them to any of the above-named pursuits, owing to the want of some more direct mode of conveying or obtaining intelligence, than that afforded by the usual newspapers and periodicals, the editor (Mr. Weale, of the Architectural Library, Holborn), purposes to establish a Circular, that will, in the most efficient and direct mode, convey the information it professes to give to those individuals, free of all charge, who are chiefly interested in it, and who will thus of necessity have it brought under their notice.

Observations on the Proposal of building at the Cross, and of shutting up the Royal Bank Close. By P. Neill, LL.D., and W. Fraser. Pamph. 8vo, 11 pages.

Suggestions for Warming and Ventilating Thirty-seven Cells, to be erected in the Salop Gaol, for the separate Confinement of Prisoners. By T. N. Parker, Esq. Pamph. 8vo, 4 pages.

“I have already protested against gas, steam, and hot (or burnt) air, in regard to warming houses, or any other buildings, for human habitation; and I have endeavoured to recommend hot-water within metal pipes, as a safe and wholesome substitute. It is not fit that any one should be exposed to the choking effects of almost any kind of stove; and the columns of the newspapers abound with the details of accidents, from gas and steam, which never should be intrusted to inexperienced hands, whereby the commission of a mistake, or the omission of a duty, might at any time involve the most fatal consequences.”

Description of an Inkstand, upon a simple, cheap, and useful Plan,

in which the Supply of Ink adjusts itself by a Float, with Figures engraved on Wood. Pamph. 8vo, 8 pages.

The plan is to have a float of cork swimming in the ink, and a guide to keep it always under the orifice into which the pen is inserted.

Remarks on the Report of the Lord Provost's Committee, 19th July, 1837, relative to the Proposal of building at the Cross. By P. Neill, Esq. Pamph. 8vo, 8 pages.

MISCELLANEOUS INTELLIGENCE.

ART. I. Domestic Notices.

ENGLAND.

"NEW Light" in the House of Commons. — Last night, the House of Commons presented a novel and pleasing effect, from the peculiar mode in which it was lighted. Instead of being lighted with wax candles, as heretofore, in chandeliers, suspended along either side, which, from their position, were found inconveniently obstructive, and disagreeably dazzling in many parts of the house, the ingenious experiment was tried of producing a blaze of light, from a vast number of gas jets (we understand 3680 in number), displayed in six rows along the whole extent of the house, but behind the glazed ceiling which was recently erected, within the old roof of the *quondam* House of Lords. The ceiling being glazed with ground glass, gives a brightness to the light as it passes through it, which causes it to resemble daylight in an extraordinary degree; and the result, to those who have just passed from the darkness without doors, through the fiery glare of oil lamps along the lobbies, is one almost of enchantment. For the first second or so after entering, the change, perhaps, rather dims the sight than otherwise: but the eye very soon becomes at home in its new medium, and discerns that it is at once cooler, and more uniformly luminous, than that which it had been accustomed to within these walls. The immense body of flame which is required for this purpose, as may naturally be supposed, emits a considerable volume of heat; but this, from being confined to the upper part of the building, naturally tends to cool its general atmosphere, upon the well-known principle of pneumatics, by which theatres are cooled, by means of a furnace-like chandelier over the pit. On the whole, we consider the experiment of last night decidedly successful, and one which is capable of application, with a decided increase of comfort and health, to other buildings, besides the House of Commons. The expense, however, we understand to be rather great: some say as much as threepounds, others thirty shillings, an hour. (*Morn. Chron.*, Feb. 13. 1838.)

Improvement of London. — We are happy to observe, that Alderman Wood's committee is reappointed. We hope that, among numerous other points, the two following will be attended to:—1. To render the street crossings more safe for persons on foot, and especially the aged, the infirm, and women carrying or having the care of children, by breaking up these crossings by lamps into spaces from 12 ft. to 20 ft. wide, always taking care that the number of spaces be equal, in order that the passage of carriages, either way, may be equal. 2. The laying down a line of flagstone, or asphaltic pavement, along the centre of the graveled footpaths, all round London, to the distance of ten or twelve miles from town. This last is, perhaps, not within the power of the committee; but, if they approved of it, they might recommend it. We fear, however, that Alderman Wood's object is rather splendid streets than safety for foot passengers. There are some others of the committee, however, from whom

we expect better things, and to them we would address ourselves as to the crossings. — *Cond.*

City of London Literary and Scientific Institution, 165. Aldersgate Street. — On the 20th of November, the first stone of a new library, and other offices belonging to the institution, was laid by Mr. John Reynolds, the senior member of the committee, who delivered an address on the occasion. The principal features of the buildings now erecting are as follows : —

The exterior of the building next Aldersgate Street is to be faced with white Suffolk brick ; and the cornices and dressings are to be in part executed with Bath stone, and in part with Roman cement. The entrance to the institution is through a doorway of good proportion, and of rather an original character. Above this is a stylobate, upon which rests the window of the committee-room, consisting of two Corinthian pilasters and columns, in entire relief, with entablature and archivolt over. The upper windows are of a plainer description, but by no means destitute of architectural embellishments. The façade is surmounted by a massive modillion cornice and blocking-course. The interior is arranged as follows : — On the basement story are, the porters' apartments, laboratory, and an *entrée* to the theatre, or lecture-room, with accommodations of a domestic nature. On the ground floor are, the porters' hall, principal hall and staircase, and various entries. The depth of the new building is about 75 ft. The one-pair story contains a library, 45 ft. long and 17 ft. high, lighted by skylights, introduced into the panels of ceiling ; a handsome committee-room, with *entrées* and lobbies to the other rooms and offices. The upper portion of the building is appropriated as a residence for the secretary. The reading-room intended to be made in the present building will be nearly 35 ft. square, and some of the class-rooms will be exceedingly spacious. The newspaper-room will be about 32 ft. by 20 ft. The lecture-room is to be heightened, and a gallery erected. The address was as follows : —

“ Fellow Members,

“ Time rolls on, empires rise and fall, but the mind of man still progresses towards maturity. Such, however, is the perfection of the Divine intellect, and so manifold are the resources of His power, that, notwithstanding every year teems with new discoveries, and every day adds fresh sources of enjoyment to those we already possess, even now we find ourselves only on the threshold of that state which the great Creator has destined us ultimately to attain. Shall we not, then, hail with pleasure, and embrace with delight, every opportunity, and every means that will enlarge our minds, elevate our thoughts, and expand our views concerning all things around us : for knowledge is to the mental, what light is to the material, world. Let us, then, rejoice my friends, that this day we have met to lay the first stone of a temple dedicated to literature and science, which, when complete, will offer increased advantages to their votaries ; a temple wherein worshippers of every denomination may meet, as it were, around one family altar, where all who “ learning love ” may join as in one common brotherhood. Among the nations of the earth, the tree of knowledge is still comparatively barren ; it has found, however, a congenial soil in this our favoured land ; and the long list of Britain's sons and daughters who have enrolled their immortal names on the pages of her history, proves that here, as elsewhere, the good seed, when properly nurtured, will always produce a rich and abundant harvest. Judging from the success of the past, we may venture to predict that, through future years, the City of London Literary and Scientific Institution will continue to be a blessing to the youth of this great metropolis, the *alma mater* to thousands yet unborn. It has been said that “ to the art of printing we owe our rank as a nation, the wonderful discoveries in science, and the blessed diffusion of religion ; ” but the preservation and continuance of these privileges must greatly depend on the increased intelligence of the people, arising from an extended and improved system of instruction. May the day, then, be not far distant when the blessings of a sound and liberal education shall be so widely spread, that to

refuse it to the humblest subject of these realms, will be considered as an insult to the whole community. To me, this is the proudest era of my life : the labours of the past are all rewarded in the pleasure of this moment ; and let us hope that our humble labours in the diffusion of knowledge will be crowned with that success we fondly anticipate, and which persevering exertion in a good cause must ultimately secure."

In the stone was deposited a bottle, containing a short account of the rise and progress of the institution ; the number of members (830) ; the number of volumes in the library, 7600 ; and a list of the President, Vice-Presidents, officers, and Committee of Management, written on vellum ; a copy of the laws, &c., a newspaper of the day, and a medallion of the Queen, struck in commemoration of her visit to the city. J. Blyth, Esq., Architect ; Mr. Griffiths, Builder. — *J. R. London, Dec. 1837.*

The Reform Club-House. — The Reform Club have set an example to all similar institutions who have it in their power to encourage competition in the fine arts. They have received designs and plans for a new club-house, from the most eminent architects, and hung them up in the committee-room for the inspection of members. A premium of 500*l.* was offered for the successful design ; and the committee, having given the preference to Mr. C. Barry's design, in the bold and massive style of Florentine architecture, called a general meeting of the club, for the purpose of finally deciding between that and the other designs. The meeting was very numerously attended, and confirmed the selection of the committee. The whole of the ground between the Travellers' and the open space facing the Carlton, is intended to be occupied by the new building, which will surpass in magnificence, if erected on the scale now planned, any edifice in London erected for similar purposes. (*Morn. Chron.*, Dec. 15.)

Improvements in the North-Western Part of London. — Two new squares are now being formed on the west side of the Edgeware Road, on the large space of ground between the back of Oxford Terrace and Connaught Square. The one to the north of Burwood Place and St. John's Church is called *Cambridge Square* ; that to the south, *Oxford Square*. Another, to the west of these is also commenced, termed *Hyde Park Square* ; and the fine row of first-rate houses, named Hyde Park Gardens, on the Uxbridge Road, facing the Park, are nearly finished. The Park itself has been recently much improved, by the judicious substitution of an iron railing for the long dead wall which constituted its northern boundary, by the erection of the Victoria Lodge and gates, and by the formation of a broad gravel walk (with handsome and substantial iron guard-rail and posts) from Cumberland Gate to Kensington Gardens. — *G. B. W. London, Dec. 1. 1837.*

A new Street is projected from Westminster Abbey to Pimlico, by Mr. Bardwell. Other great changes are contemplated in that quarter, including the erection of a market. — *G. Dec. 2. 1837.*

Safety of Bonds, Bills, &c. — A large banking-house, which has recently been finished in the first style of architecture, consequent upon the improvements in the city, had an immense pit or well dug many feet below the surface, and made water-proof by substantial brickwork. The mouth of the pit opens in the floor of the bank parlour, but, during the hours of business, is effectually covered by the oaken floor. At the close of the day, and in the presence of the responsible parties, the bank books, bonds, bills, notes, security and specie, enclosed in proper receptacles, are placed on the trap over the orifice of the well, and, by the aid of ingeniously contrived machinery, the property is lowered to the bottom, a depth of about 40 ft., the trap-door is secured, and at the opening of the bank in the morning, the property is again raised to suit the purposes of the day. (*Morn. Chron.*, Jan. 13.)

Specimens of painted Glass. — Those of your readers who are lovers of painted glass, I beg to refer to a specimen that may be seen at Brook's Glass repository, Strand, which is an admirable imitation of the window painted by Jervas, and designed by Sir J. Reynolds, in New College Chapel, Oxford. In

Russell the curiosity dealer's shop, King Street, Covent Garden, there is also a small painted window of the Crucifixion, which might form, in a larger one of the Gothic style, a very good centre piece, with a border. It was, no doubt, the work of an old master; but, as I could not learn whence it was taken, his name is unknown to me. — *Frederick Lush.* Nov. 30. 1837.

Roe's Water-Closet, without the usual Apparatus, which may be seen at the Gallery of Practical Science, Lowther Arcade, Strand, deserves notice, as showing how a water-closet may be placed at any distance whatever from the cistern. The construction is extremely simple; wires, cranks, box, valve, &c., being dispensed with, and the water being admitted to the basin simply by turning a cock under the seat. Of course, the force of the water, after the cock is turned, will be in proportion to the height of the head; and, if the pressure on the cock is very great, there may be some danger of its leakage. We shall be glad, however, to see this water-closet fairly tried. The inventor's address is Windmill Place, Camberwell Road.

CHESHIRE. — *New Church at Stayley Bridge.* — On Feb. 2., the corner stone of this church was laid by Lord Viscount Combermere. Stayley church has been commenced upon a plot of land containing not less than five acres, statute measure, which has been most generously given for the purpose by the Right Hon. the Earl of Stamford and Warrington. The land fronts the turnpike road from Stayley Bridge to Huddersfield; and the nature of the substrata is such as to render it admirably adapted for interments. It is most beautifully situated, with reference to the delightful scenery of the surrounding country, which will render the church a conspicuous and pleasing land-mark. The church will be a Gothic edifice, in that style of architecture which prevailed towards the close of the thirteenth century, as beautifully exemplified in the cathedrals of Salisbury, Lincoln, and York, and also in Beverley minster. The leading features of the design are, a lofty nave in the centre, lighted from clerestory windows; with aisles on the sides, lighted by coupled lancet windows between the buttresses. The tower is placed at the west end of the nave, and it is in four stories, or compartments, in height. In the first story is placed the west entrance to the church, which consists of a bold recessed doorway, 6 ft. wide, having moulded architraves round, and a hood mould over, terminating upon carved heads. In the second story of the west front is placed a two-light window, with elegant tracery and appropriate hood mould, terminating upon grotesque heads. The next story is formed by paneling for clock-dials on three sides of the tower. The last story is formed by two narrow lancet belfry windows, on each face of the tower, filled in with louvre slates, to keep out the weather, and to allow free egress for the sound of the bells. Each angle of the tower is flanked by double buttresses, in four stages, the two first terminating in double-weathered offsets, and the two last in weathered canopies. Above the latter rise four octagonal turrets, with shafts at their angles, supporting canopies over their faces; the whole surmounted by lofty pinnacles, terminating in appropriate finials, the highest part of which will be 88 ft. above the ground-line. The staircases to the galleries are placed on each side of the tower, and are lighted by lancet windows. The east end of the nave projects beyond the ends of the aisles, to form the chancel; the external angles being flanked with bold double buttresses, in one unbroken height, having large attached circular shafts at the angles, and terminating in large plain canopies; above these are placed two large octagonal turrets, having a rich corbel table round their upper parts, surmounted by lofty pinnacles, terminating in plain nobs as finials. The east end of the nave, or chancel, is pierced for a four-light window, formed of rich and elegant tracery, similar to a part of the window in the east end of Lincoln Cathedral, and having an appropriate hood mould over the same, terminating upon carved heads. The chancel is flanked by two small buildings, one of which forms the vestry or robing-room, and the other a porch to the east entrance to the church. The east front of these buildings is pierced with small coupled lancet windows, having hood moulds, stopping upon carved bosses

and the side fronts are pierced with doorways, having lancet heads and appropriate hood moulds. The sides of the aisles are divided by buttresses into five compartments, with double buttresses at the external angles; each buttress is in two stages, the first terminating in a weathered set-off, and the last in a weathered canopy. In each compartment are coupled lancet windows, with appropriate hood moulds, terminating upon grotesque heads. The upper part of the aisles finishes with a plain slope, as a cornice, over which rises the parapet, finishing with a moulded tablet or coping. The clerestory is divided into compartments by flat buttresses, ranging with those to the aisles; above which are a cornice and parapet, similar to what has been described to the aisles. The clerestory windows are in the form of spherical equilateral triangles, filled in with tracery. The authority for this description of window may be found in the upper part of the aisles to Westminster Abbey, and in the clerestory of Lichfield Cathedral, as well as in a few of our parochial churches in the west of England. The whole of the church is to be built of stone, of a very hard and lasting quality, faced with hammer-dressed walling, and having tooled ashler dressings to all the doors, windows, &c. The extreme length of the building will be 102. ft., and the width 57 ft. The principal approach to the interior is through a porch, in the base of the tower, which communicates by arched openings on each side with the staircase to the galleries, and directly through folding doors with the ground floor. The church is divided into nave and aisles; the latter being separated from the former by five arched compartments on each side, supported on solid octagonal stone piers, with moulded capitals, from which spring the solid stone arches that support the clerestory walls, which are pierced for a window over each compartment. The east end of the nave, as before noticed, is continued beyond the end of the aisles, to form the chancel, the floor of which is raised 2 ft. above the ground floor of the church. The west end of the nave is open, by a large archway, to the interior of the tower. The whole of the nave is to have a groined ceiling, with moulded ribs upon all the intersections of the vaulting, stopping upon moulded stone corbels affixed to the spandril walls of the arches. These are to be galleries in the aisles, and at the west end of the nave. The interior will contain sittings for one thousand and six persons, three hundred and sixty of which are free. The greater portion of the free sittings are in pews, and not in open skeleton seats, as is usually the case in the government churches. There is, also, ample room for an organ of adequate size, without diminishing the number of sittings. The pulpit, reading and clerk's desks, are designed in strict accordance with the architecture of the church. The tower will hold a peal of bells, and there is ample room for a clock. There is, also, provision made for warming the building with hot water. It is expected that the church will be completed, and ready for the celebration of divine service, by March, 1839. The total cost of the building, including architect's commission, &c., will be about £100/. The cost of its erection will be defrayed by subscription, and it is to be built under the act of parliament passed in the first and second years of William IV. The architect is Mr. R. Tattersall of Fountain Street, Manchester. (*Manchester Times*, Feb. 10. 1838.)

NORFOLK.—*Norwich*. I have been so much engaged of late about the new poor houses, in addition to my general business, that I have been literally employed night and day. As soon as I perceive a desire on the part of your readers to become acquainted with the details of these buildings, I shall hand you some plans, &c. At present, I fancy I see a manifest design in excluding them from your Magazine. We used to hear of them through Mr. Frederick Lush; but now that gentleman is silent. Let the profession think as they please: there are some members of it, who are eminent, who have gone great lengths to obtain them in competition. They afford some experience, in many points, applicable to higher classes of buildings; and I do not hesitate to assert, that he who has erected several poor houses is a better judge of the best method of adapting buildings to their site, of effect in

the mass or *tout ensemble*, of domestic and economical arrangements, and of warming and ventilating, than half the architects in the kingdom; and I am sure that you will be personally gratified when you find that many of your ideas for the amelioration of mankind are embodied in these structures; which, of course, is advancing those ideas a step towards consummation.—*William Thorold. Dec. 8. 1837.*

WARWICKSHIRE. — *Stratford upon Avon Church.* — Every thing connected with the peaceful mausoleum of Shakspeare is interesting: but we feel doubly annoyed when our pleasurable thoughts are interrupted with other objects. I trust these few words will not be construed in any other sense than that of good feeling, as the object of pointing out defects should be the assistance it would give in creating works of a better and more skilful kind than any that have hitherto been erected, rather than that of censure to the architect of any particular building.

It is exceedingly gratifying to find that persons have come forward so liberally as to allow of erecting a new oak roof to this building, and that no expense has been spared to render it perfectly in character with the rest of the architecture; but, as I have been informed there is very little authority for the present design, the defects, which I am about to mention should not have appeared. In the first instance, the form of the roof is decidedly weak; the tie-beam, connected nearly to the middle of the principal rafter, is liable to cause that timber to collapse, which will then give considerable leverage to the corbel-piece below, and therefore, tend to thrust the walls out. The chancel should have been spanned with one tie-beam; and the principal rafters should have shown evidently their connexion with it; in fact, the roof should have been trussed: at present, its principle is more like that of an arch, depending upon the side walls for abutments; this appears more striking from the principal rafters being of much larger scantling than the tie-beam, which latter has all the appearance of being part only of a light framing, conveying little idea of strength. These defects in construction tend to show the deficiency of harmony in design; I have no doubt that the object of the architect was to raise the tie-beam above the label moulding of the east window, so that it might not be injured in effect by a continued tie-beam running over it; a difficulty which he would have been excused in obviating by raising the roof somewhat higher. The horizontal corbel-beams, the perpendicular queen-posts (if that term can be applied to them), and the tie-beam, bear no affinity to the principal rafters and the curved lines of the corbel-piece; and, together, they form so much *unconnected* variety, that the design is very much injured in effect. This is, however, caused more immediately by the want of connexion in the horizontal beams; for, if there had been but one horizontal line, and that the tie-beam, to contrast with the inclined rafters and the curved corbel-pieces, had been placed to add to the strength of the roof, and to give the appearance of uniting with the walls, the effect would have been good, because the mind would have been satisfied; but, as it is now, even the curved lines of the east window become disagreeable, as the union with the curve of the corbel-piece is broken by the abrupt angles in the roof. In other respects, the work appears to be well done: perhaps the stone corbels may come in for a little objection, as there appears to be a deficiency of moulding, which renders them meagre when compared with the rich moulded work in connexion with them. Whether these are the ancient or modern corbels, I know not: the deficiency in either would be equally obvious. To the professional eye these defects are sufficiently apparent; but they ought not to detract from the general merit of the work, conspicuous in other parts, and more particularly from the noble spirit of those individuals who have evinced so much good feeling in commemorating the immortal poet by the preservation of a lasting memorial, which will ever elicit honour to them from the world, and an individual gratification to themselves, only to terminate with their lives.—*B. London, Dec. 1837.*

[A very beautiful engraving of the chancel of Stratford church, as it is now restored, has just been published by Mr. Britton.—*Cond.*]

ART. II. *Retrospective Criticism.*

ERRATUM.—In my article, p. 55., I find the words *Norman* bard are inserted instead of *Roman* bard, which makes nonsense. In comparing the disadvantages of building in an extinct style of architecture with writing in a dead language, I allude to the scholiasts of the fourteenth and fifteenth centuries, and more particularly to Trissino, who wrote a *Latin poem* (a very perfect thing in its way), which the schoolmen of the day had the temerity to compare with Virgil; but which is now generally allowed to be inferior, as I say, to the lay of the meanest *Roman* bard who sung in his mother tongue; that is, the *real* Latin. You see the absurdity which the word *Norman* makes of the whole comparison. What I meant to say, in short, was, that the most elaborate attempts with the Latin, as a dead language, could never reach its simplest efforts as a living one; and, in the same way, that Gothic architecture, as a *resuscitated* style, could never enjoy the same advantages which regulated its development during the period of its *natural* existence.—*H. N. Humphreys.* London, February, 1838.

Another Word on Parsey's Doctrine of Perspective. (p. 91.)—I am not quite annihilated, notwithstanding all that Mr. Parsey and his allies have poured down upon me in such formidable force. Annihilated! not even discomfited: rather ought I to feel flattered at the notice bestowed upon me, and not a little grateful both to the ass. of Inst. Brit. Arch. (as he is pleased to style himself), and to Kata Phusin, whose attack upon me is a mere feint; for, while they pretend to come to his aid, to support his cause and fight under his banners, it is Mr. Parsey himself whom they have completely upset. It is true they both make some show of opposition to me; yet more, it would seem, for the sake of letting it be seen that they can prove by demonstrations the principle about which Mr. Parsey makes so much noise to be perfectly correct, than with any intention of refuting me; since they voluntarily admit all that I contend for; namely, that the practical application of such principle would be preposterous and absurd.

If it was chiefly for my own private information they took so much pains to show that the system to which I am opposed is theoretically correct, I believe they might have spared themselves their trouble; for I never disputed that, but was fully aware of the law according to which objects appear to diminish in proportion to their distances from the eye. This I thought might very well be taken for granted when I remarked that, if “perpendiculars” be made to converge, horizontal lines, parallel also to the picture, should be made to do the same. Mr. Parsey himself, it is true, disclaims this as an absurdity, which makes no part of his system. I am sorry for it, because if so, his system is all the more absurd, being at variance with itself, and without the merit of even consistency. Surely, he cannot be ignorant that, in regard to perspective appearance, it matters not which lines are to represent horizontal, and which vertical, ones. Suppose, for instance, I begin an interior, and draw the five planes, representing the three sides of the room (one of them parallel to the picture), the floor, and ceiling. Now, it would make no difference, were I, before proceeding further, to make one of the sides of the picture its base; by which means the ceiling and floor would become walls, and what, in the first instance, were intended for vertical lines would become horizontal ones, and *vice versâ*. Lest this should not be considered sufficiently clear, I will help myself to further illustrations from one of Kata Phusin's diagrams; namely, fig. 37. at p. 96., which will answer my purposes; for, if we reverse this, so that *b d* be considered the base, and *b e, e d*, to represent the front of a building, *b e* and *d e* become perpendiculars, and measures, not of breadth, but of height. We will further suppose that the eye is directly opposite the line *b c*, consequently, that it is nearer to it than the line *d e*, which, as, according to the rectified Parseyan system, it would be narrower if representing a horizontal line, ought here to be shorter; and the lines *b d* and *e c*, instead of

being parallel to each other and to the base of the picture, would converge to some point on the horizon.

As Kata Phusin has shown, for the goodnatured purpose of perfectly convincing me of the truth of his reasoning, the object is not parallel to the plane of the eye, or, in other words, perpendicular to the horizontal ray of vision *a d*; consequently, does not show it as it could be represented in any picture, where the spectator is supposed to be looking forward, and not upwards as is here the case; and, therefore, his diagram does not at all apply to my remarks. So much pains has been taken to set me right, that I suspect I have been misunderstood. In denying the convergence of vertical lines, all I meant was, that it is not perceptible, and, therefore, does not require to be attended to in drawing. Mr. Pocock tells me that I might satisfy myself, as they do, by making use of a sextant, or even a common foot-rule. Undoubtedly; yet people generally trust to their own eyes, and not to sextants, on such occasions; at least, such is the fashion in England, whatever it may be in Laputa. So, also, is there always some degree of animal heat in the body: nobody, however, save a Laputan philosopher, will assert that, such being the case, we ought never to say we are cold.

To what, after all, I ask, do such over-refined hair-splitting distinctions amount? or of what practical value are they? Let Mr. Pocock and Kata Phusin reply for me; and the answer of both is, None; they perfectly agreeing with me, that, notwithstanding the doctrine of the convergence of perpendiculars is speculatively right, it ought to have no influence upon practice, where it would be altogether useless, if not decidedly wrong. Were Mr. Parsey to paint the Tower of Babel (and I really do not think he could hit upon a better subject for the illustration of his theory), then, I grant, he might be justified in making the summit visibly narrower than the lower part; yet, as there never was but one Tower of Babel, and as towers of sufficient altitude to call for the application of Mr. Parsey's theory to them are by no means very common, I am afraid he will not be greatly benefited by the discovery, which, it is evident from what he says, he himself rates very highly, but which even those who dissent from me do not hold to be a particularly valuable one, because they admit it to be quite useless, or worse than useless, in practice. Were I myself to express my own opinion of it unreservedly, most certainly I should not make amends for my former want of courtesy by the term I should apply to it. That I was in the first instance quite as courteous as the occasion called for, is my own opinion: my object was not to compliment Mr. Parsey or his system; nor did I care to make a show of great deference and respect for the former, while attacking the latter. Had I affected more courtesy, it would, perhaps, have been construed as sneering hypocrisy; therefore, no more excuse on that head. Happily, Mr. Parsey himself is less sensitive than his seconds are for him: he is too warmly wrapped up in the consciousness of having achieved a great and important discovery, to care much for what either myself or any one else may say to its disadvantage. I leave him, therefore, to the enjoyment of having brought forward a theory so ingenious and refined, that, as is admitted even by those who defend it, it is utterly useless in practice. Yet, if I am decidedly hostile to the species of reform in perspective which he is endeavouring to bring about, I freely admit that there is ample room for reform, not in theory, but in the practical application of perspective; and not least of all in regard to fixing the horizontal at the natural level of the eye, instead of placing it quite arbitrarily, as is frequently done, and as, I perceive, is the case in the cut given at p. 91., of the *Glyptotheca* at Munich, which, were it perfectly correct in every other respect, would in that be sufficiently erroneous; since it conveys the idea of a building not much more than double a person's height; whereas the height from the ground to the top of the pediment is 60 English feet. [The engraving at p. 91. was not from a sketch by Mr. Humphreys; but was one that we had had engraved from the *Munich Guide* for the *Encyclopædia of Gardening*, some years since.]—*Candidus*. London, Feb. 1838.

Dr. Ure's Report on M. Bernhardt's System of Warming and Ventilating. (p. 31.) — Being at present very much occupied, I am prevented from replying in detail to the attack upon my new system of warming and ventilating, by Dr. Ure, published in the January Number of this Magazine. I beg to say, for the present, that I am executing a very important work; which, when finished, will, like Lord King's house itself, and other works, that for four years have been in operation, refute all the charges and misstatements made by him in his hasty report. I cannot avoid briefly noticing one chief point; which is, that Dr. Ure's examination of Lord King's residence took place in July, when the temperature of the atmosphere was 72°; and when the fires were kept up day and night, expressly for drying the house, which was completely accomplished in about three weeks. — *F. A. Bernhardt. 92. York Road, Lambeth, Feb. 12. 1838.*

ART. III. *Queries and Answers.*

MODE of securing Water-Pipes against Frost. — If you will peruse the following paragraphs, you will the better be able to understand my questions appended to them.

“During the late frost, almost every family in England has suffered from an evil which might have been very nearly, if not entirely, prevented by a very simple precaution, and at very inconsiderable cost: I refer to the freezing of water in pipes. On the return of mild weather, the pipes, in most cases, have burst, and great injury has been done to property and health.

If the water-pipes had been enclosed in pipes, or cases, and surrounded 2 in., or even 1 in., by sawdust, coal-ashes, or, better still, powdered charcoal (which is one of the best non-conductors we know), the water in the pipes would have retained its temperature, and the inconvenience complained of could not have taken place. There would, also, be this additional advantage, that, in summer, the water would not be (as most of the London water is) tepid, when drawn from the pipe. I have been greatly surprised to find that, in houses built with the utmost care, at a very great expense, and by the most eminent architects, such an obvious and simple preventive against so general and serious an evil should have been so generally overlooked.” (*Morning Chronicle*, Feb. 15.)

“It is a pity that the author of the above paragraph has not given his name and address, or the name and address of some competent person, to whom one could apply for advice in matters of this kind. I have great doubts if 1 in., or even 2 in., of powdered charcoal would keep out the frost, when the surrounding temperature is at zero of Fahrenheit, or even lower; but, perhaps, there is some positive evidence on this subject, which, if one knew where to find, might, perhaps, be satisfactory to them. The mode of emptying the pipes, immediately after the water has been supplied, is, I believe, the most general about London; but this is of no use in very severe frosts, because the water freezes the moment it is turned on. Charcoal, or deeply burying the pipes in the earth, is, doubtless, better; because, if the receiving cistern should be out of the reach of frost, a supply may be received regularly during the most severe weather. But how is the receiving cistern to be kept from frost. In the house which I occupy there is one large cistern in the area, surrounded by 9-in. brick walls, the water in which has been one solid lump of ice for the last six weeks. There is a wooden cistern, enclosed in a house, the water of which is also one solid lump of ice. There are two cisterns, for water-closets, under shed roofs, similarly frozen; and there is a cistern to a water-closet within the house, on the first floor, similarly circumstanced. Thus, in a house for which 5*l.* a year is paid to a water company for ordinary and high service, not a drop of water has been delivered to the house for the last six weeks; and the only means for procuring a supply for daily use have been the plugs in the street. The idea of a fire breaking out under such circumstances

is dreadful. No fault is to be found with the water companies; but there is obviously something very defective in the builders' arrangements. Surely, this kind of improvement would be well worth a premium by the Institute of British Architects, at least, as much so as the restoration of Greek temples. I should wish to know how we are to be certain of having an abundant supply of water to a street house in winters like the present. Perhaps some of your readers can state how the supply is obtained in cold countries. It is surely time that the art of supplying water to houses, from main pipes laid in the streets, were reduced to a regular and secure system. I wish some German architect, M. Bernhardt, for example, would inform us how water is supplied to the houses in Germany in the winter season. I should, also, be glad to know what is to be done in the case of fire, when no water is obtained. I have thought of powdered ice or snow, if there happened to be any on the ground. But how is it to be thrown on the fire? with shovels; or should it be made up into balls or fragments, and thrown, by hand, in at the windows or on the roof? There is great want of information on the subject of extinguishing fires, as well as on that of supplying water; and I hope scientific builders and plumbers will turn their attention to the subject, and favour the public, through your pages, with their advice and experience. — *T. W. S. Brompton, Feb. 16. 1838.*

Fire-proof Safes. — In consequence of the fire at the Royal Exchange, and at other places, this winter, some experience must have resulted as to the comparative value of different kinds of safes. Which, then, after all, is the best? Is Chubb's as good as it would appear to be from the following advertisement? —

"Chubb's Patent Fire-proof Safes.

"Saw-Mills, Grosvenor Basin, Pimlico, Jan. 25. 1836.

"We certify that these papers were enclosed in Chubb's patent fire-proof box, and exposed in the furnace of a steam-engine of twenty-two horse power, by which the box became red-hot in three minutes, and remained in the furnace in that state for a considerable time, and were taken out in our presence, perfectly uninjured.

"R. R. Arnz.

"E. W. Lower.

"R. Goodman, Engineer." (Morn Chron., Jan. 13. 1837.)

I am informed that a banking-house in Lombard Street has a well, 40 ft. deep, as a safe. Is this fact? and, if so, can any of your readers give any account of it? — *Henry B. White. Chelmsford, Feb. 10. 1838.*

Filtration. — A committee appointed by the French Academy of Sciences have examined into the merits of the apparatus invented by M. de Fonvielle, for the filtration of water, and which has been in constant use at the Hôtel Dieu for eight months. The committee give it their full approbation; and the principles on which it acts are those of high pressure, combined with two opposing currents, put in daily motion by means of taps and pipes, for the purposes of cleansing and preventing all adhesion of earthy and impure matter. (*Athenæum*, Dec. 9.) Can any of your readers explain to me the precise meaning of the above paragraph; or, in other words, explain the mode of filtering referred to. — *James Simpson. 24. Great George Street, Edinburgh.*

ART. IV. *Institute of British Architects.*

DEC. 15. 1837. — P. F. Robinson, V. P., in the Chair.

Elected. F. H. Groves, London; S. S. T. Carlow, Kennington; and W. A. Buckley, Bayswater; as associates.

Presented. Catalogue of Medals struck in France and its Dependencies, 8vo. Hood on Warning by Hot Water, 1 vol. 8vo. Campanari's Essay on Etrurian Vases. Model of the Obelisk of Material, near Cairo, from M.

Bonomi. Bust of the late T. Harrison, Esq., Architect of Chester. Print of the Altar Window of St. Peter's Church, Hampton Lacey, Warwickshire. Schloss's List of the Meetings of the learned Societies of London. Specimens of Granite and Limestone used in Dublin.

Papers read. A paper on the Restoration of the Temple of Jupiter Olympius at Athens, by C. E. A. Blair, Esq. Architect. On the relative Strength of several Cast-iron Beams, when subjected to a transverse Strain; by C. Parker, Fellow.

Exhibited. The following Drawings sent in for the Soane Medallion. Two Restorations of the Abbey of St. Mary, York; Restoration of Kirkstall Abbey, Yorkshire; Restoration of Llanthony Abbey, Monmouthshire.

Dec. 18. 1837. — P. F. Robison, V. P., in the Chair.

Elected. The Right Honourable Sir Robert Peel, Bart., as Honorary Fellow. M. Hubsch, Carlsruhe; M. De Salucci, Stuttgart; M. Ohlmüller, Munich; M. Lavess, Hanover; M. De Lassaulx, Coblenz; M. Förster, Vienna; M. De Nabile, Vienna; M. Bourla, Antwerp; and M. Louis Serureau; as Honorary and Corresponding Members.

Read. Part II. of Mr. Blore's History of the English School of Gothic Architecture. A paper on Architectural Notation, with the Proposition of a Uniform System for general Adoption; by T. L. Donaldson. A Description of Wellerstedt's newly invented Metal for covering Roofs. A Description of Roe's Water-closet.

Presented. Palladio, translated into French by Leone, 2 vols. folio; Rutter's Description of Fonthill Abbey; and various French pamphlets.

Jan. 29. 1838. — Earl de Grey, President, in the Chair.

Elected. C. J. Richardson, Architect, London, as Fellow; G. B. Webb, London, and C. Henman, London, as Associates.

Presented. Seven original Drawings, by Bibiena and others, from Sir J. D. Stewart. An ancient Roman Roof-tile, from G. Saunders, Esq. Tredgold on Warming and Ventilation, 3d edition, 1 vol. 8vo. Britton's History of Cassiobury, 1 vol. folio. Original Drawings, by Hardwick and Adam. Transactions of the Geological Society for 1837 and 50/. from G. B. Greenhough, Esq.

Read. A Communication from H. E. Goodridge, Esq., "On the Ruins of a Roman Villa, recently discovered at Newton, near Bath." Part of an Essay, sent in for the Institute Medal, "On the Excellence which distinguishes the ancient Athenian Architecture, and on the Principles of Art and Science by which they were obtained, with regard to Design, Proportion, Light and Shade, Colour, Construction, and Adaptation to Purpose, to Situation, and to the Materials employed."

Exhibited. Mr. Joyce, of Camberwell, gardener, attended with one of his newly invented stoves, and explained its general uses, and applicability to various purposes. A Portrait of Her Majesty, by E. A. Challon, Esq., R.A.

ART. V. Obituary.

DIED at Berlin, June 29., *Aloysius Hirtt*, the eminent antiquary and professor of archæology, known to the learned world by his various treatises on architectural subjects; such as the *Temple of Diana at Ephesus*, *Solomon's Temple*, *The Pantheon at Rome*, &c.; especially by his treatise on the architecture of the ancients, entitled, *Die Baukunst nach den Grundsätzen der Alten*, folio, 1809, with 50 plates; a work of very superior merit, and no ordinary ability. Latterly, he was much occupied in the arrangement of the collection in the Museum at Berlin. He was born at Donaueschingen, in Suabia, in 1759, and was therefore about 78 years old; yet, notwithstanding his advanced age, retained not only his faculties, but his cheerfulness and activity of mind, almost to the very last.

THE ARCHITECTURAL MAGAZINE.

APRIL, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *The Poetry of Architecture.* By KATA PHUSIN.

No. 2. THE COTTAGE — continued.

V. *A Chapter on Chimneys.*

It appears from the passage in Herodotus, which we alluded to in the last paper, that there has been a time, even in the most civilised countries, when the king's palace was entirely unfurnished with anything having the slightest pretension to the dignity of chimney tops; and the savoury vapours which were wont to arise from the hospitable hearth, at which the queen or princess prepared the feast with the whitest of hands, escaped with indecorous facility through a simple hole in the flat roof. The dignity of smoke, however, is now better understood, and it is dismissed through Gothic pinnacles, and (as at Burleigh House) through Tuscan columns, with a most praiseworthy regard to its comfort and convenience. Let us consider if it is worth the trouble. We advanced a position in the last paper, that silence is never perfect without motion, that is, unless something which might possibly produce sound, is evident to the eye: the absence of sound is not surprising to the ear, and, therefore, not impressive. Let it be observed, for instance, how much the stillness of a summer's evening is enhanced by the perception of the gliding and majestic motion of some calm river, strong but still; or of the high and purple clouds; or of the voiceless leaves, among the opening branches: to produce this impression, however, the motion must be uniform, though not necessarily slow. One of the chief peculiarities of the ocean thoroughfares of Venice, is the remarkable silence which rests upon them, enhanced, as it is, by the swift, but beautifully uniform motion of the gondola. Now, there is no motion more uniform, silent, or beautiful, than that of smoke; and, therefore, when we wish the peace or stillness of a scene to be impressive, it is highly useful to draw the attention to it.

In the cottage, therefore, a building peculiarly adapted for scenes of peace, the chimney, as conducting the eye to what is agreeable, may be considered an important, and, if well managed,

a beautiful accompaniment. But in buildings of a higher class, smoke ceases to be interesting. Owing to their general greater elevation, it is relieved against the sky, instead of against a dark back ground, thereby losing the fine silvery blue, which, among trees, or rising out of distant country, is so exquisitely beautiful, and assuming a dingy yellowish black: its motion becomes useless; for the idea of stillness is no longer desirable, or, at least, no longer attainable, being interrupted by the nature of the building itself: and, finally, the associations it arouses are not dignified; we may think of a comfortable fireside, perhaps, but are quite as likely to dream of kitchens, and spits, and shoulders of mutton. None of these imaginations are in their place, if the character of the building be elevated; they are barely tolerable in the dwellinghouse and the street. Now, when smoke is objectionable, it is certainly improper to direct attention to the chimney; and, therefore, for two weighty reasons, *decorated* chimneys, of any sort or size whatsoever, are inexcusable barbarisms; first, because, where smoke is beautiful, decoration is unsuited to the building; and, secondly, because, where smoke is ugly, decoration directs attention to its ugliness. It is unfortunately a prevailing idea with some of our architects, that what is a disagreeable object in itself may be relieved or concealed by lavish ornament; and there never was a greater mistake. It should be a general principle, that what is intrinsically ugly should be utterly destitute of ornament, that the eye may not be drawn to it. The pretended skulls of the three Magi at Cologne are set in gold, and have a diamond in each eye; and are a thousand times more ghastly than if their brown bones had been left in peace. Such an error as this ought never to be committed in architecture. If any part of the building has disagreeable associations connected with it, let it alone: do not ornament it; keep it subdued, and simply adapted to its use; and the eye will not go to it, nor quarrel with it. It would have been well if this principle had been kept in view in the renewal of some of the public buildings in Oxford. In All Souls College, for instance, the architect has carried his chimneys half as high as all the rest of the building, and fretted them with Gothic. The eye is instantly caught by the plated-candlestick-like columns, and runs with some complacency up the groining and fretwork, and alights finally and fatally on a red chimney top. He might as well have built a Gothic aisle at an entrance to a coal wharf. We have no scruple in saying that the man who could desecrate the Gothic trefoil into an ornament for a chimney has not the slightest feeling, and never will have any, of its beauty or its use; he was never born to be an architect, and never will be one.

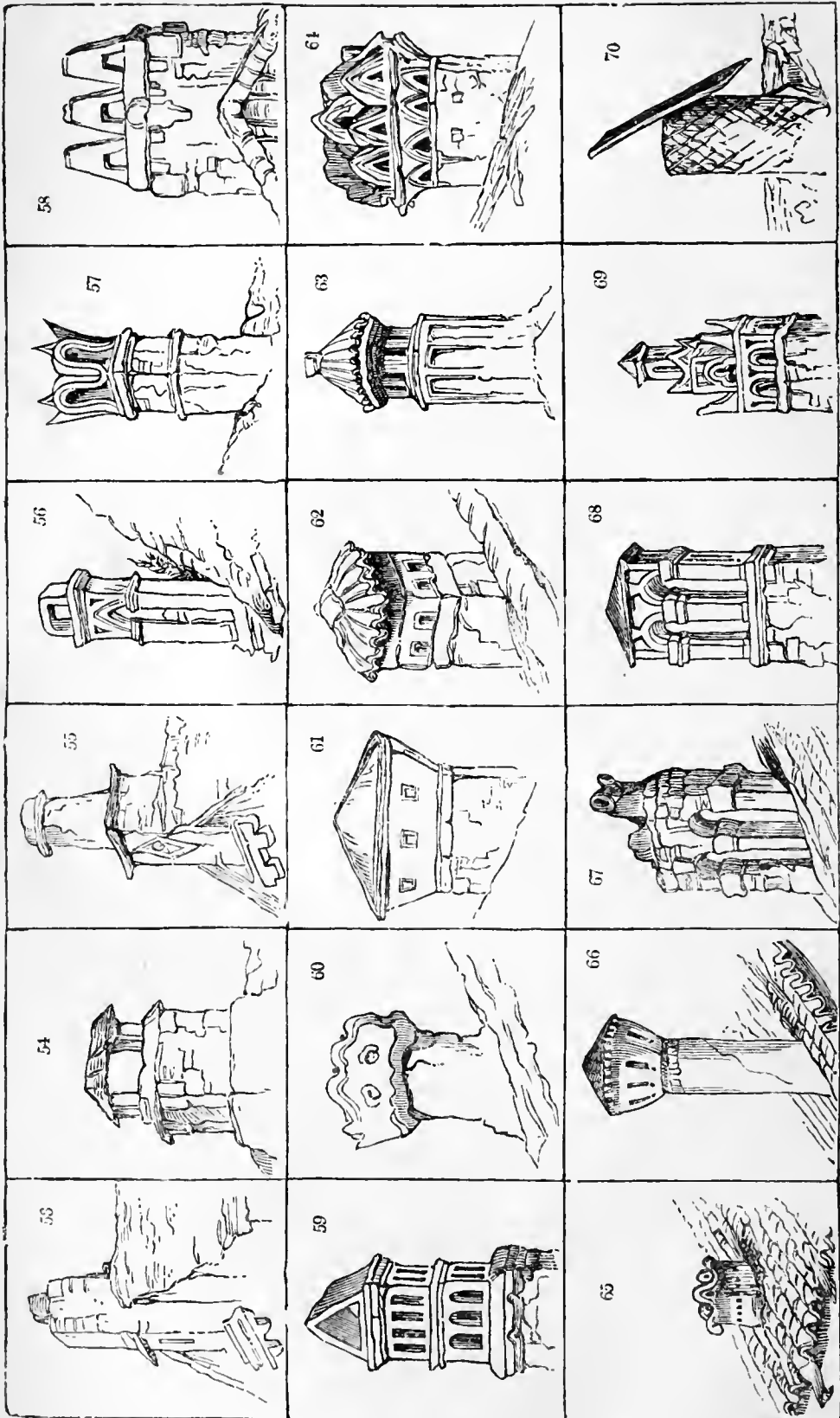
Now, if chimneys are not to be decorated (since their existence

is necessary), it becomes an object of some importance to know what is to be done with them : and we enter into the enquiry before leaving the cottage, as in its most proper place ; because, in the cottage, and only in the cottage, it is desirable to direct attention to smoke.

Speculation, however, on the beau-ideal of a chimney can never be unshackled ; because, though we may imagine what it ought to be, we can never tell, until the house is built, what it *must* be ; we may require it to be short, and find that it will smoke, unless it is long ; or, we may desire it to be covered, and find it will not go unless it is open. We can fix, therefore, on no one model ; but by looking over the chimneys of a few nations, we may deduce some general principles from their varieties, which may always be brought into play, by whatever circumstances our own imaginations may be confined.

Looking first to the mind of the people, we cannot expect to find good examples of the chimney, as we go to the south. The Italian or the Spaniard does not know the use of a chimney : properly speaking, they *have* such things, and they light a fire, five days in the year, chiefly of wood, which does not give smoke enough to teach the chimney its business ; but they have not the slightest idea of the meaning or the beauty of such things as hobs, and hearths, and Christmas blazes ; and we should, therefore, expect, *à priori*, that there would be no soul in their chimneys ; that they would have no practised substantial air about them ; that they would, in short, be as awkward and as much in the way, as individuals of the human race are, when they don't know what to do with themselves, or what they were created for. But in England, sweet carbonaceous England, we flatter ourselves we *do* know something about fire, and smoke too, or our eyes have strangely deceived us ; and, from the whole comfortable character and fireside disposition of the nation, we should conjecture that the architecture of the chimney would be understood, both as a matter of taste and as a matter of comfort, to the *ne plus ultra* of perfection. Let us see how far our expectations are realised.

Figs. 53, 54, and 55. are English chimneys. They are distinguishable, we think, at a glance, from all the rest, by a downright serviceableness of appearance, a substantial, unaffected, decent, and chimney-like deportment, in the contemplation of which we experience infinite pleasure and edification, particularly as it seems to us to be strongly contrasted with an appearance, in all the other chimneys, of an indefinable something, only to be expressed by the interesting word "humbug." *Fig. 53.* is a chimney of Cumberland, and the north of Lancashire. It is, as may be seen at a glance, only applicable at the extremity of the roof, and requires a bent flue. It is built



of unhewn stones, in the same manner as the Westmoreland cottages; the flue itself being not one third the width of the

chimney, as is seen at the top, where four flat stones placed on their edges form the termination of the flue itself, and give lightness of appearance to the whole. Cover this with a piece of paper, and observe how heavy and square the rest becomes. A few projecting stones continue the line of the roof across the centre of the chimney, and two large masses support the projection of the whole, and unite it agreeably with the wall. This is exclusively a cottage chimney; it cannot, and must not, be built of civilised materials; it must be rough, and mossy, and broken; but it is decidedly the best chimney of the whole set. It is simple and substantial, without being cumbrous; it gives great variety to the wall from which it projects, terminates the roof agreeably, and dismisses its smoke with infinite propriety.

Fig. 54. is a chimney common over the whole of the north of England; being, as I think, one that will go well in almost any wind, and is applicable at any part of the roof. It is also roughly built, consisting of a roof of loose stones, sometimes one large flat slab, supported above the flue by four large supports, each of a single stone. It is rather light in its appearance, and breaks the ridge of a roof very agreeably. Separately considered, it is badly proportioned; but, as it just equals the height to which a long chimney at the extremity of the building would rise above the roof (as in *fig. 53.*), it is quite right *in situ*, and would be ungainly if it were higher. The upper part is always dark, owing to the smoke, and tells agreeably against any background seen through the hollow.

Fig. 55. is the chimney of the Westmoreland cottage which formed the subject of the last paper (p. 97.). The good taste which prevailed in the rest of the building is not so conspicuous here, because the architect has begun to consider effect instead of utility, and has put a diamond-shaped piece of ornament on the front (usually containing the date of the building), which was not necessary, and looks out of place. He has endeavoured to build neatly too, and has bestowed a good deal of plaster on the outside, by all which circumstances the work is infinitely deteriorated. We have always disliked cylindrical chimneys, probably because they put us in mind of glasshouses and manufactories, for we are aware of no more definite reason; yet this example is endurable, and has a character about it which it would be a pity to lose. Sometimes when the square part is carried down the whole front of the cottage, it looks like the remains of some grey tower, and is not felt to be a chimney at all. Such deceptions are always very dangerous, though in this case sometimes attended with good effect, as in the old building called Coniston Hall, on the shores of Coniston

Water, whose distant outline (*fig. 71.*) is rendered light and picturesque, by the size and shape of its chimneys, which are the same in character as *fig. 55.*

Of English chimneys adapted for buildings of a more elevated character, we can adduce no good examples. The old red brick mass, which we see in some of our venerable manor-houses, has a great deal of English character about it, and is always agreeable, when the rest of the building is of brick. *Fig. 67.* is a

71



chimney of this kind: there is nothing remarkable in it; it is to be met with all over England; but we have placed it beside its neighbour *fig. 68.*, to show how the same form and idea are modified by the mind of the nations who employ it. The design is the same in both, the proportions also; but the one is a chimney, the other a paltry model of a paltrier edifice. *Fig. 68.* is Swiss, and is liable to all the objections advanced against the Swiss cottages; it is a despicable mimicry of a large building, like the tower in the engraving of the Italian cottage (*fig. 40* p. 104.), carved in stone, it is true, but not the less to be reprobated. *Fig. 67.*, on the contrary, is adapted to its use, and has no affectation about it. It would be spoiled, however, if built in stone; because the marked bricks tell us the size of the whole at once, and prevent the eye from suspecting any

intention to deceive it with a mockery of arches and columns, the imitation of which would be too perfect in stone; and therefore, even in this case, we have failed in discovering a chimney adapted to the higher class of edifices.

Fig. 56. is a Netherland chimney, *figs. 57 and 58.* German. *Fig. 56.* belongs to an old Gothic building in Malines, and is a good example of the application of the same lines to the chimney which occur in other parts of the edifice, without bestowing any false elevation of character. It is roughly carved in stone, projecting at its base grotesquely from the roof, and covered at the top. The pointed arch, by which its character is given, prevents it from breaking in upon the lines of the rest of the building, and, therefore, in reality renders it less conspicuous than it would otherwise have been. We never should have noticed its existence, had we not been looking for chimneys.

Fig. 57. is also carved in stone, and where there is much variety of architecture, or where the buildings are grotesque, would be a good chimney, for the very simple reason, that it resembles nothing but a chimney, and its lines are graceful. *Fig. 58.*, though ugly in the abstract, might be used with effect in situations where perfect simplicity would be too conspicuous; but both *figs. 57. and 58.* are evidently the awkward efforts of a tasteless nation, to produce something original: they have lost the chastity which we admired in *fig. 53.*, without obtaining the grace and spirit of *figs. 63. and 66.* In fact, they are essentially German.

Figs. 60. to 64., inclusive, are Spanish, and have a peculiar character, which would render it quite impossible to employ them out of their own country. Yet they are not decorated chimneys. There is not one fragment of ornament on any of them. All is done by variety of form; and with such variety no fault can be found, because it is necessary to give them the character of the buildings, out of which they rise. For we may observe here, once for all, that character may be given either by form or by decoration, and that where the latter is improper, variety of the former is allowable, because the humble associations which render ornament objectionable, also render simplicity of form unnecessary.* We need not then find fault with *fantastic* chimneys, provided they are kept in unison with the rest of the building, and do not draw too much attention.

Fig. 60., according to this rule, is a very good chimney. It is graceful without being pretending, and its grotesqueness well suits the buildings round it—we wish we could give them: they are at Cordova.

* Elevation of character, as was seen in the Italian cottage, depends upon simplicity of form.

Figs. 62. and 63. ought to be seen, as they would be in reality, rising brightly up against the deep blue heaven of the south, the azure gleaming through their hollows; unless perchance a slight breath of refined, pure, pale vapour finds its way from time to time out of them into the light air; their tiled caps casting deep shadows on their white surfaces, and their *tout ensemble* causing no interruption to the feelings excited by the Moresco arches and grotesque dwelling-houses with which they would be surrounded; they are sadly spoiled by being cut off at their bases.

Figs. 59. 65. and 66. are Italian. *Fig. 59.* has only been given, because it is constantly met with among the more modern buildings of Italy. *Figs. 65. and 66.* are almost the only two varieties of chimneys which are to be found on the old Venetian palaces (whose style is to be traced partly to the Turk, and partly to the Moor). The curved lines of *fig. 65.* harmonise admirably with those of the roof itself, and its diminutive size leaves the simplicity of form of the large building to which it belongs entirely uninterrupted and uninjured. *Fig. 66.* is seen perpetually carrying the whiteness of the Venetian marble up into the sky; but it is too tall, and attracts by far too much attention, being conspicuous on the sides of all the canals. *Figs. 68, 69, and 70.* are Swiss. *Fig. 69.* is one specimen of an extensive class of decorated chimneys, met with in the north-eastern cantons. It is never large, and consequently having no false elevation of character, and being always seen with eyes which have been prepared for it, by resting on the details of the Swiss cottage, is less disagreeable than might be imagined, but ought never to be imitated. The pyramidal form is generally preserved, but the design is the same in no two examples.

Fig. 70. is a chimney very common in the eastern cantons, the principle of which we never understood. The oblique part moves on a hinge, so as to be capable of covering the chimney like a hat, and the whole is covered with wooden scales, like those of a fish. This chimney sometimes comes in very well among the confused rafters of the mountain cottage, though it is rather too remarkable to be in good taste.

It seems then, that out of the eighteen chimneys, which we have noticed, though several possess character, and one or two elegance, only two are to be found fit for imitation; and, of these, one is exclusively a *cottage* chimney. This is somewhat remarkable, and may serve as a proof: —

1st, Of what we at first asserted, that chimneys which in any way attract notice (and if these had not, we should not have sketched them) were seldom to be imitated; that there are few buildings which require them to be singular, and none which can tolerate them if decorated; and that the architect should always

remember that the size and height being by necessity fixed, the form which draws least attention is the best.

2dly, That this inconspicuousness is to be obtained, not by adhering to any model of simplicity, but by taking especial care that the lines of the chimney are no interruption, and its colour no contrast, to those of the building to which it belongs. Thus, *figs. 60. to 64.* would be far more actually remarkable, in their natural situation, if they were more simple in their form; for they would interrupt the character of the rich architecture by which they are surrounded. *Fig. 56.*, rising as it does above an old Gothic window, would have attracted instant attention, had it not been for the occurrence of the same lines in it which prevail beneath it. The form of *fig. 65.* only assimilates it more closely with the roof on which it stands. But we must not *imitate* chimneys of this kind, for their excellence consists only in their agreement with other details, separated from which they would be objectionable; we can only follow the principle of the design, which appears, from all that we have advanced, to be this: we require, in a good chimney, *the character of the building to which it belongs divested of all its elevation, and its prevailing lines deprived of all their ornament.*

This it is, no doubt, excessively difficult to give; and, in consequence, there are very few cities or edifices in which the chimneys are not objectionable. We must not, therefore, omit to notice the fulfilment of our expectations, founded on English character; the only two chimneys fit for imitation, in the whole eighteen, are English; and we would not infer anything from this, tending to invalidate the position formerly advanced, that there was no taste in England; but we would adduce it as a farther illustration of the rule, that what is most adapted to its purpose is most beautiful. For that we have no taste, even in chimneys, is sufficiently proved by the roof effects, even of the most ancient, unaffected, and unplastered of our streets, in which the chimneys, instead of assisting in the composition of the groups of roofs, stand out in staring masses of scarlet and black, with foxes and cocks whisking about, like so many black devils, in the smoke on the top of them, interrupting all repose, annihilating all dignity, and awaking every possible conception which would be picturesque, and every imagination which would be rapturous, to the mind of master-sweeps.

On the other hand, though they have not on the Continent the same knowledge of the use and beauty of chimneys in the abstract, they display their usual good taste in grouping, or concealing them; and, whether we find them mingling with the fantastic domiciles of the German, with the rich imaginations of the Spaniard, with the classical remains and creations of the Italian, they are never intrusive or disagreeable; and either assist the

grouping, and relieve the horizontality of the lines of the roof, or remain entirely unnoticed and insignificant, smoking their pipes in peace.

It is utterly impossible to give rules for the attainment of these effects, since they are the result of a feeling of the proportion and relation of lines, which, if not natural to a person, cannot be acquired, but by long practice and close observation; and it presupposes a power rarely bestowed on an English architect, of setting regularity at defiance, and sometimes comfort out of the question. We could give some particular examples of this grouping; but, as this paper has already swelled to an unusual length, we shall defer them until we come to the consideration of street effects in general. Of the chimney in the abstract, we are afraid we have only said enough to illustrate, without removing, the difficulty of designing it; but we cannot but think that the general principles which have been deduced, if carefully followed out, would be found useful, if not for the attainment of excellence, at least for the prevention of barbarism.

Oxford, Feb. 10.

ART. II. *Historical Notice of Solomon's Temple: with some preliminary Remarks on the Tabernacle.* From Lectures on Archæology, delivered in Paris by M. Raoul Rochette, and published in "L'E'cho du Monde savant." Translated for the "Architectural Magazine," by M. L.

THE Jewish people had no works of art but such as were borrowed. Therefore, it is as a part of Phœnician archæology, that we must study two principal monuments which Hebrew architecture supplies us with; viz. the tabernacle and temple of Jerusalem, which refer to the ages of Moses and of Solomon; and both of which display Egyptian and Phœnician influence. The tabernacle, erected after the departure from Egypt, and in the Desert, recalled the idea of an Egyptian temple, or of the tent of a pastoral people; and the temple of Jerusalem reproduced this general form, with the accessories and ornaments with which the artists of Tyre embellished it.

The Tabernacle. — The sacred writings inform us, that when God had made known his laws and commandments to the Israelites, by the mouth of Moses, his prophet, he commanded them to construct a monument, which they should carry with them, and into which he would occasionally descend.

At this happy intelligence, the people immediately began the work, and brought as offerings, gold, silver, copper, odoriferous woods, skins of goats and sheep of all colours, purple and white wool, precious stones set in gold, and perfumes.

Every thing being prepared, Moses ordered an enclosure to

be made of 100 cubits long, and 50 broad *, in which the tabernacle was placed: 20 pillars of bronze were arranged on the sides, and 10 of the same metal at the ends, each 5 cubits high: the capitals were of silver, and the bases of gold. A large veil of very fine linen, stretched round this quadrangular enclosure, surrounded it like a wall. The front of the enclosure was 50 cubits.

On each side of the door was placed a double pillar covered with leaves of gold and silver; and to this double pillar were added, within the enclosure, three other pillars, arranged on each side, in a straight line, so as to form a vestibule 5 cubits in depth.

A veil 20 cubits long and 5 broad enclosed the entrance: it was woven of purple and hyacinth-coloured linen, and represented images of cherubim, to which we shall hereafter refer.

In the vestibule stood a large vessel of copper, supported by a base of the same metal, from which the sacrificing priest took the water for ablutions.

The tabernacle, which was 30 cubits long and 20 broad, was placed in the middle of this enclosure. The entrance was turned towards the east, that the sun might illuminate it with its first beams. Each side was composed of 20 planks of wood, covered within and without with plates of gold, cut in right angles, the breadth of each being a cubit and a half. The tabernacle was divided into three parts in its whole length; and this division, according to Josephus, represented the symbolical figure of the world. The space in the middle, enclosed by columns and veils of linen, was called *The Holy of Holies*, or *The Most Holy*.

To cover the top and sides of the tabernacle, 10 pieces of tapestry, 28 cubits long and 4 wide, were fastened to the wood-work by clasps of bronze gilt.

It is evident, from this succinct description, that the tabernacle, a monument of a mixed style, borrowed from the Egyptians and Phœnicians, had, so to speak, no character peculiar to itself; and clearly expressed how much the Jews had borrowed from the systems of architecture of these two nations, and how much they respected the law of Moses, which prohibited the Jews from using sculpture and other imitative arts.

Solomon's Temple. † — The city of Jerusalem, according to the *Jewish Antiquities*, was seated on two hills facing each other, and separated by a magnificent valley. The highest hill was called the high city, the other, named *Arca*, was the site of the low city, and faced, on the east side, Mount Moriah, on which Solomon erected his temple.

* The Hebrew cubit is about $1\frac{1}{2}$ ft.

† See Third Book of Kings, Second of the Paralipomena, and the works of Vilalpond, Calmet, and Bernard Lamy.

This mountain being only an irregular hill at first, it was necessary, in order to extend the appurtenances of the temple on a level surface, to support the sides by enormous constructions. The eastern sides skirted the valley of Cedron; that of the south was furnished with a wall of masonry, of 300 cubits in height; the western side was in the form of a theatre; and that of the north was separated from the temple by a large ditch.

About six centuries after the construction of the tabernacle, David, having taken possession of the city of Salem, drove out all the Jebusites, repaired the breaches, rebuilt the dwelling-houses, and resolved to establish here the seat of his government, by raising a temple to the Eternal, and giving to this city the name of *Hieru-Salem*, Jerusalem, or *Sacred City*. But the following night the Lord appeared to the prophet Nathan, and spoke to him in these words:—

“Go find my servant David, and tell him: Behold what the Lord sayeth: I shall place upon the throne after you your son, who shall proceed from you, and I shall establish his kingdom. He shall build a house to my name, and I shall render the throne of his kingdom secure for ever.”

David having learnt from Nathan that his kingdom should descend to his posterity, and that one of his children should build a temple, went immediately to prostrate himself before the tabernacle and return thanks to God for this favour.

Solomon, son of David, in the fourth year of his reign, and in the month Jar (April), 592 years after the departure from Egypt, 1440 years after the Deluge, and 3102 after the creation of the world, realised the grand intention of his father, by erecting a temple to the Eternal on Mount Moriah. As there was a want of wood and artists in Judea, he wrote on this subject to Iraam, or Hiram, king of Tyre, who sent him hewers of stone, sculptors, and casters of metals. The correspondence occasioned by this negotiation was still in existence in the time of Josephus, at Jerusalem, and in the archives of the city of Tyre.

“Hiram, having heard the words of Solomon, was greatly delighted, and gave him wood of cedar and pine, as much as he desired. Solomon also chose workmen, and commanded that 30,000 men should be appointed for this work. He sent them to Lebanon in turns, 10,000 each month, so that they remained two months at home. Adoniram had the superintendence of all these people. Solomon had 70,000 labourers who carried burdens, and 80,000 who cut the stones on the mountain; besides those who had the superintendence over each work, and who were 3300 in number.”

This magnificent temple was 60 cubits long, only 20 broad,

according to Josephus, and 30 cubits high. On this edifice was raised another of the same size, which made the general height of the temple 60 cubits: round it were 30 chambers, of 25 cubits in length and 20 in height, built in the form of galleries, and communicating with each other.

It was in these chapels, as they may be called, that the vases, and all the precious ornaments used at the sacrifices, were preserved. Josephus gives, perhaps, an exaggerated list of them.

In front of the temple was a portico, 120 cubits high by 10. These extraordinary dimensions accord so ill with the height of the temple, that most commentators have been led into error. In this difficulty they have taken the most convenient way of getting off, by saying that there must be a fault in the text. M. Hirt, himself, in his *Dissertation critique sur le Temple de Jerusalem*, is greatly mistaken in giving only 20 cubits in height, for the dimensions of the portico: it is not so. The learned German Stieglitz has clearly proved that the dimensions of the portico should be 120 cubits high by 10. This portico is, besides, only an imitation of the pylorus which preceded the Egyptian temples.

Two beautiful pillars of bronze, ornamented with circles of gold and capitals of silver, decorated the portico. These two pillars, named *Jachin* and *Boaz*, were executed by the celebrated artist, Hiram, whom Solomon had sent for from Tyre: they were 35 cubits high, and their capitals five.

These pillars are referable to a system of architecture which is not unknown to us, and to the idea of theology of the first nations, that is, to religious dualism; for these round pillars are to the temple of Jerusalem what the obelisks or sphinxes were to the edifices of Nubia and Egypt, and the phalli or the cones to the temples of Gazza, Hierapolis, and Paphos. In the middle of this wonderful enclosure was placed the sea of brass, a vast basin reposing on twelve supports of the same metal, and serving for the legal purifications.

By adhering only to the details transmitted to us by the *Bible*, as the most authentic in every respect, it is possible to reconstruct the edifice almost entirely.

The temple of Solomon was composed of a *cella* 60 cubits long. This *cella* was divided into two very distinct parts, by the pillars of cedar wood, covered with gold, the *Holy* and the *Most Holy* of the sanctuary: the first part, which was appropriated to the sacrifices, was 40 cubits long and 30 high; the *Most Holy* was 20 cubits each way: there was therefore a difference of 10 cubits between the two roofs, which has given rise to the belief of the mysterious chamber situated above the *Most Holy*. To the upper part of these two pillars, was

attached a veil of linen, woven with great delicacy, and representing various flowers of all colours.

It is remarkable, that windows were made in this temple : “And he made slanting windows in the temple,” says the *Book of Kings*. We know that the edifices of Egypt and of Phœnicia are without windows; and, although they existed in the temple of Jerusalem, they were so narrow, that they did not light the sanctuary. Solomon also says : “The Eternal dwells in darkness.” A circumstance which it would be of great advantage to know, but on which the sacred writings are silent, is the form of the roof of the temple. A flat roof would be the most analogous to the Egyptian style; but there is no proof that it was so arranged, neither do we know whether it was sloping.

The *Book of Kings*, indeed, informs us that Solomon made a ceiling (plancher) above the whole edifice; consequently it appears that the temple was covered; but we are not informed how this ceiling was made.

In the decoration of the temple, Phœnician influence is visibly manifested. No part of the wall appears; it is entirely covered by beams of cedar, and the interior partitions of wood were entirely covered with leaves of gold, rich hangings, skins of sheep, and goat's hair.

On the outside nothing was seen but the stone, and in the inside, nothing but gold. There was not a single place, according to the sacred writings, that was not overlaid with gold: the ceiling itself was covered with it. This system is evidently borrowed from the Phœnician architecture, in which only wood overlaid with gold was made use of for the interior decoration of buildings.

To adorn his temple, Solomon ordered two cherubim of solid gold, to be made, each 5 cubits high; their wings, which were also 5 cubits, were placed in such a position in the sanctuary that they covered the ark of the covenant.

Much discussion has taken place on the symbolical representation of these cherubim. According to Clement of Alexandria, they were only fantastic and imaginary beings. According to the *Bible*, on the contrary, they had wings, and consequently were ranked in the class of animals. M. Raoul Rochette thinks, and his opinion will appear very probable, that these cherubim were only sphinxes, imitated from the Egyptian and Phœnician archæology; as, according to the testimony of Ezekiel, the cherub consisted of a head placed on a body, half lion, half bull, bearing eagle's wings extended; and, from the drawings which have reached us, we find a striking resemblance between the cherubim of the Hebrew temples, and the sphinxes placed in front of the religious edifices of Nubia and Egypt.

The temple of Jerusalem was reduced to ashes by Nebuchadnezzar II., 470 years after its foundation, 598 B. C.; and, 70 years afterwards, Zorobabel laid the foundation of the second temple, which was destroyed at the taking of Jerusalem by Titus. (*L'Echo*, Dec. 6, 1837, p. 198.)

ART. III. *Brief Hints for the Preservation of the Architectural Remains of the Middle Ages.* By E. B. LAMB, F.I.B.A.

“To collect the productions of art, and examples of mechanical science or manual ability, is unquestionably useful, even when the things themselves are of small importance; because it is always advantageous to know how far the human powers have proceeded, and how much experience has found to be within the reach of diligence.” (*Rambler*, No. 83.)

DURING my perambulations in various parts of the country, I have had opportunities of observing in what state many of the most useful and interesting buildings of the middle ages, ecclesiastical and domestic, are now found; in some instances neglected and falling to decay, and in others a needless sacrifice to tasteless improvers and modern innovations. It would be absurd indeed, if, in my love for the great works of past ages, I should blindly decry the wonderful improvements which are now fast spreading over the whole country; this is not my intention: it is true, I would think twice before demolishing a building which has been a lesson to the scientific architect, a delight to the lover of the picturesque, and has called forth the energetic praises of the poet for ages past. Even the railways, those wonders of modern times, which are now sweeping every thing before them, might, perhaps, sometimes, be just sufficiently turned to prevent the wholesale demolition of ancient buildings, which, I fear, some of them may cause; and, surely, this might be done, upon consideration, without prejudice to the line of road. To say, however, that all modern improvement should give place to the relics of masonic craft, would not only be contrary to my wish, but also to my interest as an architect. Improvement, indeed, is not always the reason for destroying the ancient edifices of this country: decay, which is suffered to go beyond repair, inconvenience for present customs, and, too frequently, incompetent persons, intrusted with the care of repairing them, recklessly cutting away and disturbing parts which a little ingenuity might preserve, are the principal causes, which have, in many instances, swept from us studies that might have been of the greatest value to the modern architect. If not entire buildings, at least many of the parts which had escaped the ravages of time might have been secured for our benefit, if a proper place had been assigned for

their reception. All we now see of demolished buildings is by mere chance. An industrious antiquary, or, perhaps, mere collector of curiosities, may have some choice fragments hidden in his cabinet; but these can only be seen by the few comprising his own immediate circle. As enquiry is not to be circumscribed, and new discoveries and instruction may be gained from resources which now appear trivial, it behoves every thinking being to assist in the preservation of such records as are within his power, that he may, at least, have the gratification of having, in some measure, contributed to the welfare of his fellow-creatures. With this view, these observations have been hastily penned, as hints for the preservation of ancient architecture, either in buildings now existing, or in fragments which have necessarily been displaced from unavoidable circumstances. This could be done in such places and manner that they might be easily referred to, not only by the antiquary and the architect, but by the ordinary sight-seer, who frequently spends his time in gazing at the usual show places, without any peculiar object. To the historian, ancient architecture is a book of reference, where he reads, in the rude decorations it displays, many of the customs of past ages in no other way recorded. Too often, there are details of crimes of the blackest dye, and tyranny the most oppressive: but crimes are not the only memorials he finds in such works, virtues are unsparingly immortalised by the hand of the sculptor. Statues of benefactors to churches and charities were conspicuously interspersed among saints and angels in the cathedrals; and, in other buildings, we are frequently reminded of a good deed, by the statue of a munificent donor; nor is the fact less interesting, although conveyed to us in a simple and rude manner of execution. In many cases, perhaps, this is the only record of a name which ought to stand on the tablets of our memory, as an example of some bright star shedding its influence in the midst of the darkest ages of superstition and oppression. Here the historian seeks for his heroes, who have nobly fallen in defending their patrimony; here, too, he finds the direful effect of civil wars; in the contemplation of these remains, his mind is richly stored with historical truths which are every day becoming more visionary, as the romantic legends, which are too frequently relied upon as authentic records, are, in many instances, only transmitted by oral tradition. If to the historian the remains of antiquity are of importance, how infinitely more so are they to the architect, who is awe-stricken at the daring results of the great scientific knowledge of the masters of the craft. He looks with wonder at the lofty spire, beautifully proportioned, gradually carrying the eye, step by step, to the summit; the great variety displayed in ancient edifices, the amazing sparkle of the different parts, and yet the

perfect harmony of the whole ; he is impressed with the boldness of the groining of stone, more elaborate in its mysterious windings than the richest embroidery ; he views with delight and veneration the continued and lofty vaulting, which appears to hang in mid air ; and he is astonished at the fertile genius that produced the luxuriant ramifications of the traceried window. He examines these works closely, and endeavours to dive into the deep mystery which still hangs over the principles which governed the labours of the master minds which erected them : every new object he looks upon as a step advanced in his study, and every mutilation as so much loss to the art. But how are these objects to be preserved, when the hand of improvement is grasping every thing within its reach ? Easily and effectually. When it is necessary to destroy any of these wonders of art, let the best and most useful of the ornamental fragments be deposited in the large and now useless naves of our cathedrals : there cannot be more appropriate places ; surrounded as they would then be by works of the same period, which would be rendered still more interesting and useful by these important accessaries. Any objections that could be started to this arrangement surely would only be made by the over-fastidious : in this part of the cathedral none of the forms and ceremonies of our religion are performed, and in this situation a useful and highly interesting classification of the architecture of the middle ages might be arranged in every cathedral in the country, without in the least interfering with the convenience of, or cumbering, the building. Between the columns of the nave, and against the walls of the aisles, might be arranged fragments ; which, even when in the building they belonged to, could not be better seen or better understood ; and a judicious classification would give picturesque effect and interest to these parts of our ecclesiastical buildings which they never before obtained. What a field of interest and instruction would thus be thrown open to the whole community ! How easily might these fragments bear their own brief history ! For instance, I will merely suppose the fragment of a rich moulded arch ; it would only be necessary to mention where it came from, the span and height of the arch, and all other matters relating to the building might be kept, and would be kept, in histories devoted to the purpose. I need not mention in how many different ways these things may be impressed on our minds ; and the opportunity this would give for that general knowledge and love of architecture which is so necessary for the promotion of the art. Here the idler, who previously sought the cathedral merely as a place of curiosity, and without any other reason for so doing than that of killing time, or doing as others have done before him, might, almost imperceptibly, acquire an interest he never before thought of ; and this might be the

means of turning a useless member of society into a useful one, and of applying resources for the benefit of science which before were only wasted in idle dissipation. It must not be imagined, however, that I expect every one who entered the cathedral would have the same feeling on this subject. I am aware that it requires a mind generally predisposed to the pursuit, and that great time and application are necessary to become versed in this study: but a good, clear, and well-arranged classification might be so briefly and evidently explained, that it would be understood by, and would become interesting to, the most ordinary capacity.

In the preservation of the remains of the architecture of the middle ages, if only a few are benefited or interested in their study, even then a great object will be gained; and as they then would be placed within the reach of every professor of the art, it would be a step to the study of the architecture of their own country, in a superior way than that now generally pursued. It would induce a fuller enquiry into the principles of the composition of the ancient architects, and might effectually put a stop to the bad taste, so prevalent of late, for making miniature imitations of cathedrals, castellated cottages, and Gothic steam engines.

To the ecclesiastical members of the church, and all others officially engaged therein, or in the least desirous of preserving the edifices of the middle ages, these relics would be of the highest importance; not only to assist in the restoration and repairs of ancient architecture, but in ascertaining any date upon which the least doubt had been thrown. They would be of use to all; and, by becoming the objects of a laudable curiosity, would imperceptibly assist in refining the taste of the lower orders, and securing the patronage of the higher.

ART. IV. *On the Establishment of a Society for the Restoration of ancient Buildings.* By M.

ABOUT a year ago it was contemplated to form a society for the purpose of raising funds for the repair and restoration of ancient buildings. Many beautiful monuments of the piety and taste of the olden time have lately been rescued from decay by individual exertion; but it is now absolutely necessary, that immediate steps should be taken to raise a general fund, to be applied according to the discretion of a committee, to the preservation of such churches, or other ancient edifices, as are valuable for their architectural beauty, or as national memorials. Many of our finest old parish churches, the present neglected state of which is disgraceful to us as a nation, are so circumstanced as to make the preservation of their beauties by any other

means impossible. Every year increases the evil, and none but those who are in the habit of examining country churches can tell how much has been done in the last few years, towards sweeping away from our villages whatever was interesting or beautiful in these ancient structures. The note of alarm was first sounded, *ten years ago*, by an able writer in the *British Critic*. He gives a list of churches which deserve the most careful preservation, and which are, or lately were, unrepaired or ill-repaired to a very great extent. From this list I will make a few extracts, adding examples which have come under my own observation. In Bedfordshire, Dunstable Priory is in great want of repair: of Luton Church, Rickman says that "it has been a rich and beautiful specimen, but is now sadly dilapidated and disfigured in the ornamental parts." In Derbyshire, the stonework of Chesterfield Church is in very bad condition. The once splendid east window of Dronfield Church is stripped of its tracery, and partly bricked up. Bebbington Church in Cheshire, a beautiful composition, is rather dilapidated. Trinity Church, the Ladye Chapel of Ely Cathedral, is in very great want of exterior repair. In Gloucestershire, Cirencester Church has a fine porch, much decayed. Elliston, a curious Norman relic, is also perishing for want of attention. The large church of Romsey, in Hampshire, is very much out of repair. In Lancashire, the east window of Holland Chapel, a very fine specimen of the early decorated, has been unsafe for many years; and the chancel window of Winwick has lost all its tracery, once very fine. Lincolnshire formerly contained more magnificent churches than any other county, and the devastation has been proportionably extensive. Ravenby and Leadenham, two very fine churches, have lost their tracery, and are losing their stonework. At Ripingale, part of the south aisle is used as a schoolroom: here are two very fine tombs with effigies, which are subject to continual mutilations. At Heckington, one of the richest and most valuable churches in the county, the tracery of the north transept window has been destroyed. The west front of Crowland, which Rickman styles one of the most beautiful portions of rich early English in the kingdom, is in such a state, that a very slight fall from above would entirely destroy it. The fine church of Higham Ferrers, in Northamptonshire, has lost much of its stonework. In Oxfordshire, the windows of Adderbury have been deprived of their fine tracery; and the curious church of Barford is much decayed. The windows of Tamworth have lost their tracery. In Warwickshire, the stonework of the two splendid spires of Coventry is sadly decaying. In Yorkshire we have Headon despoiled of tracery; Howden Chancel, one of the most elegant decorated buildings in England, in ruins; Selby, Old Malton, and St. Michael, Malton, in a miserable state. To these may be added, Llandaff Cathedral

in ruins ; part of St. David's in ruins ; east end of St. Alban's in ruins ; the large cruciform church of All Saints, Pontefract, in ruins ; Bridlington, once as fine as Beverley, now presenting a melancholy picture of mutilation. The grand east window of Hawton, Notts, is falling to pieces from the decay of the stonework. But it is needless to proceed with this enumeration, to which every reader could add many similar examples. The destruction of painted glass has been so general, that except a few wretched fragments, it is now seldom seen in village churches ; and the numerous coats of arms, often so useful in determining points of family history, have perished. In Devonshire, a few years since, few churches were without a rich screen and pulpit ; but now many have fallen. I would also mention the disgraceful condition of the cloisters and chapter-house at Westminster, and of many of the finest monuments in the Abbey. How long are the splendid tombs of queen Eleanor, of Edward III., of Henry III., with the neighbouring screen, and (with the almost solitary exception of the tomb of Aymer de Valence) nearly all the monuments of early English and decorated date, with their beautiful canopies and rich sculpture, to be suffered to moulder away in the very centre of the wealth and refinement of the kingdom ? Let it not be said of us, that the noble and costly structures, in which our forefathers in past ages worshipped God, have been suffered to perish by our neglect, and that we, their descendants, so far from emulating these glorious works, want even the taste and spirit to preserve them from ruin. There have lately appeared some symptoms of a better feeling ; and there wants but the establishment of a society as I have suggested, to embody and increase it. If but a few hundreds were annually raised, this would rescue from decay every year some beautiful remnant of our national architecture. Let clergymen in every part of the kingdom be invited to report on the state of their churches, and where the parishioners are willing to come forward to the extent of their ability (as is almost everywhere the case), let a grant of money be voted by the society to assist them in the work of restoration. In this manner, many a beautiful window, screen, niche, font, canopy, &c., would be preserved from decay ; and their preservation would have a most beneficial influence upon the national taste, and promote the revival, upon true principles, of English architecture. I have trespassed upon your indulgence to a length which nothing but the importance of the subject could warrant ; and most sincerely do I hope to see the matter taken up by those who have displayed such praiseworthy zeal in particular instances, and whose knowledge and influence would insure success.

January, 1838.

ART. V. *An Account of an immense Chimney, recently built at Carlisle; with Suggestions for applying Chimneys or Cones, of immense Height, to scientific Purposes.* By P. A.

“THE immense chimney attached to the new cotton factory, now being built for Messrs. Peter Dixon and Sons, in Shaddongate, had the last stone placed upon it on October 24. 1837. It is one of the highest buildings in England, being 305 ft. from the ground; and, for the purpose to which it is to be applied, is understood to be the highest erection in the world. It may be distinctly seen for many miles in all directions around Carlisle, and forms a beautiful object in the view of our city, from which ever quarter you approach it. The building is of the octangular form, and is built with brick, the angles being formed of stone. The base, which is built with fire-bricks, is 17 ft. 8 in. in width inside, and the thickness of the wall at the foundation is 10 ft. It tapers upwards to a width, inside, of 6 ft. 3 in.; and on the outside 8 ft. 9 in. Near the top there is a cornice of stone, 7 ft. in depth, which projects 3 ft., and above this there are 8 ft. 3 in. of brickwork, surmounted by a coping stone, one foot in thickness. The cornice gives a finished and classical appearance to the building; and the whole would be taken for some splendid national monument, rather than a mere conduit pipe for smoke. It is not a little creditable to Carlisle, that this magnificent work was entirely executed by a native of that city, a builder, Mr. Richard Wright, who has completed it in a way to give the most entire satisfaction to every scientific man who has examined it. Considering its immensity, the work was completed in an incredibly short period of time. The foundation stone was laid on Sept. 11. 1835, by P. Dixon, Esq.; the first brick was laid by Mr. Wright, on Sept. 17.; the last course of bricks, also by Mr. Wright, on Oct. 22., and the last coping stone on Oct. 25. 1836; thus completing the work in thirteen months. The erection was carried on from the inside, stages being erected as the work proceeded, and the workmen and materials being taken up in boxes prepared for the purpose, by a crab worked by four men; and it is gratifying to add that the whole was finished without any accident occurring to any individual engaged in it.

“As the work approached conclusion, numbers of people expressed an anxiety to have a peep from the top. In order to gratify the public curiosity, the Messrs. Dixon ordered a box to be prepared, and the necessary arrangements to be made to accommodate as many as might choose to ascend. The workmen finished their labours about noon; and, the day being very clear, although very windy and extremely cold, numerous parties ascended in the course of the afternoon, and this accommodation was continued for a few days. The box was calculated to hold four persons, three visitors and a guide, who had been accustomed to ascend the building. A door opened on each side of the box, to admit the passengers, and was then locked, and the word being given, it slowly ascended to the “upper regions,” a process which occupied about fourteen minutes. When within a few feet of the top the box passed through a trap door, which immediately fell down again, and thus afforded a secure landing place. From this the ascent to the top is by two ladders of about 7 ft. each, and as the visitor rises upon the last platform the most magnificent sight imaginable bursts upon the view. The city lies at his feet, with all its winding streets clearly and distinctly seen as upon a map; and the huge factory itself, to which the chimney is but an adjunct, looks like a building of some two stories in height. It forcibly illustrates Shakspeare’s description of the appearance from Dover cliffs:—

———— ‘How fearful

And dizzy ’t is, to cast one’s eyes so low!
The crows and choughs that wing the midway air
Show scarce so gross as beetles: half-way down

Hangs one that gathers samphire ; dreadful trade !
 Methinks he seems no bigger than his head :
 The fishermen that walk upon the beach
 Appear like mice : and yon tall anchoring bark,
 Diminish'd to her cock ; her cock, a buoy
 Almost too small for sight.'

"The view of the country around is most extensive and picturesque. The spot on which the chimney stands seems the centre of a huge amphitheatre, to which the horizon forms a circular boundary. Rich and fertile valleys, intersected with farm-houses and the seats of country gentlemen, and with the rivers winding, like streaks of silver, in the most beautiful curves, lie extended in such extent and variety, that the eye for a time is bewildered by the number of objects presented ; whilst the mountains rise pile above pile on each side, like walls surrounding the mighty area. On the west side might be seen the estuary of the Solway, with vessels taking their departure from Bowness ; and on the other, the locomotive engines careering along to the opposite side of the island, carrying with them to the east tokens of the wealth and enterprise of the west. Altogether a sight more enchanting and exhilarating can scarcely be conceived. On Oct. 24. the thermometer at the bottom of the column stood at 41° in an exposed situation ; at the top of the column, exposed in the same aspect, it was at 38° ." (*Carlisle Journal*, Oct. 29. 1836.)

Soon after I read the above account, I fancy I fell asleep ; but whether awake or asleep, as I sat by my fire, the following thoughts came into my head, which I hope you will not set me down as unpardonably foolish for communicating to you. I thought the British Association had grown enormously rich (as it is to be hoped they will) ; that they had money at command to spend upon every great object for the advance of science ; and that, amongst others, it had been determined to erect a tower, or chimney, five thousand feet in height, to be wholly devoted to the purposes of scientific research or observation. It was conceived, that by having a tower of this height, with easy access to its summit, many problems in meteorology, electricity, terrestrial magnetism, and astronomy, &c., might be solved at once, which can now either be only arrived at circuitously or not at all. It seemed that the designs were complete ; and that nothing more was required, but to choose a site, where a foundation sufficiently good, and abundance of material, could be procured. One of the coal districts was chosen, where there was foundation on the solid rock ; clay, to make bricks ; sandstone and lime in abundance ; and coal to be used in making the bricks, dressing the stones by steam power, and elevating them on the lofty summit by the same.

The general form was to be conical, and a floor with a circular aperture was to be placed at every 500 ft., while by suitable machinery a stage could be elevated to the summit from below, or lowered again with people or instruments, in a few minutes.

The lower part was to be made of stone, and the upper of brick ; lest if all be made of the latter, the upper might crush

the lower part with its weight. I thought I heard that the first experiment was to be, to repeat that made in St. Paul's, of letting a body fall so as to prove the rotation of the earth; and that in this case, some other important deductions could be made from the experiment.

It seemed to me, at first, that a high mountain would answer all the purposes of the tower; but, on reflection, I soon saw this was not the case. Now, my reverie, or dream, as such things generally are, was rather confused and indistinct in some places; but I was so much struck with a sort of vein of sense or reality which ran through the whole, that I determined to give you an account of it; and would be much obliged for my own information, and that of other country readers like myself, if you or some of your intelligent and scientific correspondents would consider, and say whether such a tower could be built; and, if so, would it really have any scientific uses? and, if both, what would be the detail of its construction and its cost? Surely *a company* could be got up to build it, if it could be shown to be of use: and how grand a national monument it would be! In an economical point of view, it would pay by showing people the view from the top, at so much a head.

I hope, because I have sent you the above speculation, you will not consider me bereft of my wits. The idea is not intended as any covert attack upon the British Association for the Advancement of Science; far from it: on the contrary, I seriously do believe, that, if such a tower, cone, or pyramid, could be accomplished (but this, I fear, is out of the question), its scientific uses would be many and great; at all events, the novelty of the idea will, I trust, set some of your correspondents to work, to consider the means of carrying such an idea into execution; and, in this view, the problem which I have proposed may prove neither useless nor uninteresting.

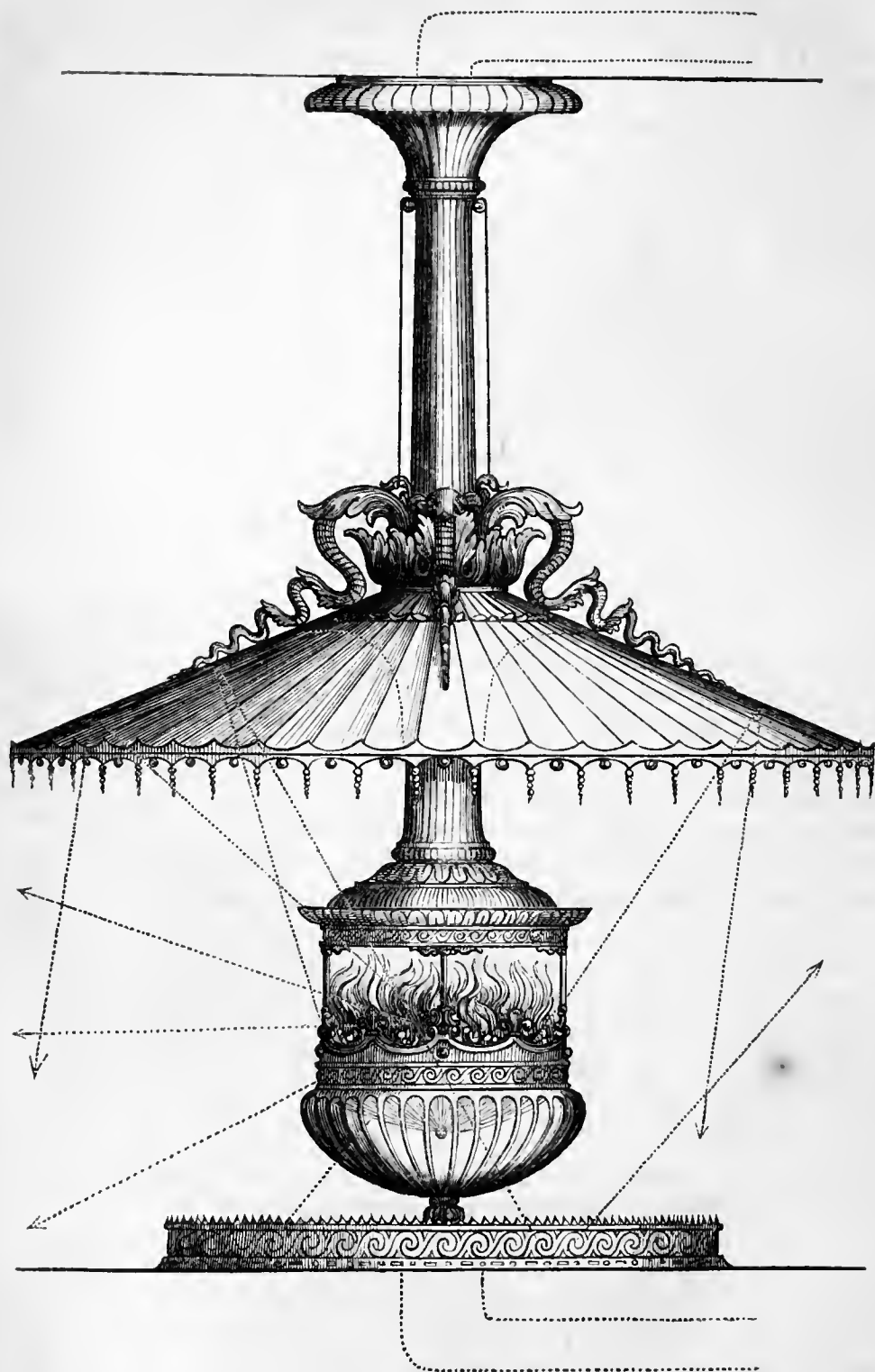
Belfast, Jan. 29. 1838.

ART. VI. *A Stove on a new Construction, for heating any large Apartment, or the House of Commons.* By R. MALLET.

I SEND you a sketch (*fig. 72.*) of mine for a new stove, to heat a great hall, library, or drawingroom, of a palace or other large edifice. The stove is intended for a large party to sit round; and its objects are not only to warm to the best advantage, but to look warm; and at the same time to ventilate effectually, without causing those drafts of air at the back, which are so miserably felt at our common fires.

This stove is intended to burn charcoal, coke, or anthracite,

72



or wood, or turf, or, with certain precautions, even coal. It is placed in the centre of the apartment. The lower part consists of a sort of open cage, to hold the fuel, with a close top or dome over

it, communicating with a cylindrical vertical flue, proceeding to the ceiling. It rests upon a single stud below, and is strongly fastened above, so as to be in great measure suspended. The floor of the room beneath it, for about 8 ft. in diameter, consists of a polished plate of cast iron, surrounded with a perforated ornamental ring-fender. In the centre of this plate, and communicating with an air-flue in the floor, is a large ventilator for supply of air to the fire. Above the fire cage, or "focus," is a conical hood, suspended by two slight chains parallel to the flue, and having a hollow cylindrical balance-weight inside of it, to which the chains are attached; they pass over two small pulleys, where they enter the sides of the flue above.

The draft, or smoke, of course, passes through this hollow cylindrical weight. Thus the hood is enabled to be slid up and down for a certain space. When at the lowest, it is so placed, that a short tube, which forms its centre and grasps the flue, covers completely certain openings or slits therein; but, when it is thrown up about 18 in., it uncovers them.

The vertical flue passes along horizontally above the ceiling, in the thickness of the floor, to the side flue in the wall, where such is a convenient arrangement, care being taken to guard against fire.

The hood is proposed to be made of sheet brass or sheet steel, and polished or burnished inside. Now, the working of the stove is thus:—The situation, as to height of the "focus," is so arranged, and its own form so made, that as large a quantity of heat, or rather as great a number of rays of heat, shall reach the polished iron plate beneath, as possible. These are all thrown upwards and outwards at various angles, as shown in the sketch. In the same way the angle, diameter, and height of the conical hood are made such, that the largest possible number of rays shall reach it also from the "focus;" and these are either reflected downwards and outwards directly, or reflected against the lower plate, where they pass outwards by a second reflection. Now, as the form of the cage, or "focus," is circular, almost the whole of the radiated heat is made effective, either directly, or after one or two reflections.

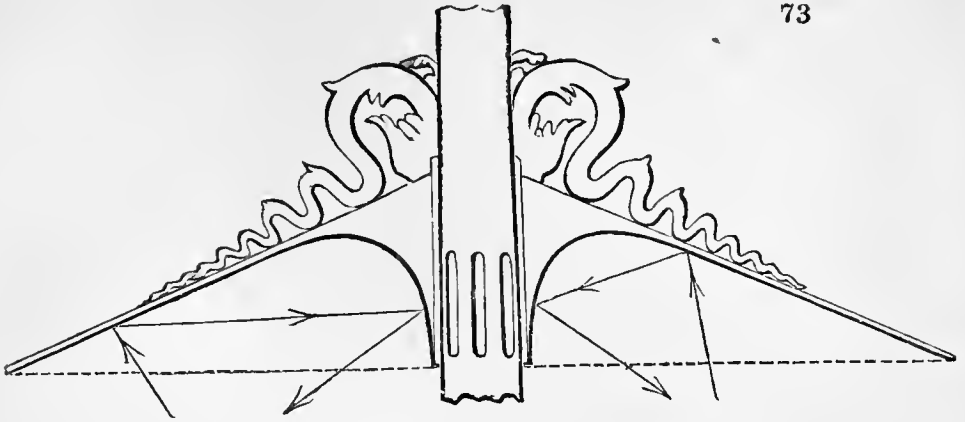
So much for heating; now for ventilation. The fuel, it has been said, is supplied by an air-flue from below. Over the architraves of the windows are long slits, opening and shutting, and admitting fresh air, which, when the hood is at the lowest, diffuses itself through the hot air, and finds its way at last to the fire, at least in part; but, when more ventilation is desirable, the hood is thrown up, when, at once, not only the rays of heat are thrown further out, beyond the sitters round, and more diffused, but the slits into the flue are opened beneath the hood,

when immediately a current of air begins to flow in under its edges, and is collected and drawn up the flue; but at such a height as to be above the heads of the sitters round, while the rays of heat, now shed far outside them, shield them from any draft of cold air, like an invisible ægis. If the ventilator of the air-flue now be shut, the ventilation of the apartment is the greatest possible.

The upper and lower parts of the “focus,” it will be seen, are united only by four rods of iron: it may be all made of cast iron, and richly ornamented, and must be provided with four sheet-iron segmental blowers, to urge the fire with at first, until the draft is established, or they may be of talc, and permanently hung to the cage. The draft will require to be good and sharp; but with that there will be no danger of dissipation of smoke or vapours. The flue may be of sheet iron, with a covering of fluted and polished brass; the hood, and indeed every part of it, is susceptible of being gorgeously ornamented in bronze and gilding, &c.; and would afford an august style of ornament for a great room, and permit the greatest possible facility for conversation with comfort. The usual dimension of the hood should not be less than 8 ft., and its height from the ground about the same. It is usually considered that, of the heat of a hot body in free air, one half is lost by radiation, and the other by “evection,” or carried off by currents of air. Now, in the common fire-places, as only one side is exposed to radiation, only one fourth of the whole heat can ever be available, and the average heat obtained from house fires has been estimated as low as only one twentieth of that given out by the fuel; but, in this case, nearly all the radiant heat, or one half the whole is effective, and a larger portion of the “evective” heat, by subsequent radiation and conduction from the flue. The inside lining of the hood may be made partly hyperbolic, as shown in *fig. 73.*, to throw the heat outwards the better.

It will be observed, that the ventilation of the apartment is here carried on above the heads of the persons present, as it always should be. By a simple addition, the hood may be made to rise and fall by a self-acting apparatus, so as to keep the apartment at a constant temperature. The proportions of heat radiated by combustible bodies in burning, to that carried off by “evection,” varies in every body, and has been found a maximum in coke and turf; these, in consequence, would be the fittest fuels for this stove. Berthier has given us some very valuable information on this point.

Perhaps a gigantic stove of this sort, placed in the centre of a horse-shoe building, like the French Chamber of Deputies,



and with a hood equal to one half the diameter of the building, would be the best and most slightly mode of warming and ventilating the new Houses of Parliament, which seems to be a very puzzling problem to those concerned. It might be so contrived as in no way to interrupt the view in any direction; and might be made to have an *Athanor*-like addition, so as to hold twenty-four hours' consumption of fuel, to be gradually consumed. Of course, the form I have shown is only one of a thousand far nobler and handsomer, that might be given to the apparatus, preserving still its principles of action.

Dublin, Feb. 1. 1838.

REVIEWS.

ART. I. *An Historical Essay on Architecture*. By the late Thomas Hope. Illustrated from drawings made by him in Italy and Germany. Royal 8vo, 2d edition. London, 1835.

(Continued from p. 532.)

"IN Lombard buildings the whole of the strength requisite for support and resistance is sought in the general thickness of the wall, or in the facings that slightly project from it, or in columns leaning against it; seldom we see even solid buttresses very prominent, and I believe the flying buttress to exist nowhere in this style. The Lombard, or what we call Saxon, buttresses are shallow, broad, shelving upward in regular breaks, and quite unornamented, except by some billet or other moulding that runs from the intervening panels uninterruptedly across them; from their shallowness they seem intended rather for mere ornament than for strength and support.

"The arch is in general round-headed. Sometimes, however, we see in buildings, which, from their general style, we must call Lombard, intermixed with the round-headed arch, and evidently of the same era, but, as a mere variety from it, arches flattened: as in the exterior of the dome at Modena; the side altars of St. Apollinaire in Classe, at Ravenna; the chapel of Barbarossa's palace at Gelnhausen; and Barfreton church in Kent: or arches with two straight sloping sides, meeting at an angle, as at Rome, on the south side of Santa Maria in Trastevere."

"The Lombard churches, in general, present neither the simple oblong square of the basilica, nor the cross, with four short and equal ends, of the

Greek church : but, as an improvement upon either — a compound of both — a long nave preceding the shorter transept, and east end, so as to cause them to offer, in their ground plan, the real form of the cross ; and it should be remarked, that the centre of the transepts generally presents a pier instead of an opening with a door or window on either side : this we even see in England, in the transepts of Winchester, the south transept of Ely, and the south transept of the choir of Canterbury.”

Chap. xxiii. *Progress of the Art of constructing Arches and Vaults.* As early as the time of paganism, groined vaults existed, and their use became extensive both in Greek and Lombard buildings, in proportion to the frequency of the erection of churches.

Chap. xxiv. *Forms of the Absis, Entrance, Cupola, Spire, and Steeple, usually seen in Lombard Architecture.* The centre of the east end or sanctuary generally ended in a semicircular absis or, at times, also the ailes were made to end in absides. In some of the cathedrals in Germany, there is no entrance at the west end, but only at the side. In Lombardy, the crossing of the nave and transepts generally rises into an octagonal cupola. In Germany, in the cathedral of Worms and others, the cupola becomes a pyramidal mass or a spire.

“ As the species of architecture here described arose in a country where snow lies little on the roofs, these were generally low and flat, and under them frequently runs a gallery of small arches and pillars, which, along the sides, forms a frieze ; round the absides and cupola, a belt ; and up the gable end of the front, a slanting line of steps, exceedingly elegant, singular, and, by the smallness of its parts, increasing the apparent magnitude of the whole ; witness San Giovanni and Paolo at Rome ; the domes at Parma, Piacenza, Modena, Vercelli, and Arezzo ; the Certosa near, and San Michele at, Pavia ; San Fidale at the town, and Gravedone on the lake, of Como.

“ The small galleries, however, running up the pediment, are a very remarkable feature, entirely confined to Lombardy. Instances of these galleries under the roof and round the absides, &c., may be seen on this side of the Alps. In the cathedrals of Vienne in Dauphiné, of Spire, Worms, Mayence, and Aix-la-Chapelle ; in the Apostles, and St. Gereon, at Cologne ; St. Castor, at Coblenz ; and Sainte Croix, at Liege.

“ As soon as you reach Germany, the roofs become, as they should in a country more northern, higher and steeper ; and thence the small gable ends, forming pediments, of which I only remember one example in Lombardy — at Verona, in the absis of San Fermo — become more frequent.”

“ When, from points very distant, the faithful were to be called at some appointed hour to some assigned place of common prayer and worship, not only the clear and powerful sound of bells was deemed best calculated to convey the distant summons, but, in order that their radiating vibrations might be less impeded in their diffusion, slender but lofty edifices, called steeples, were built, for the sole purpose of lifting high in air the receptacles of these bells. It is difficult to ascertain where, and when, bell-towers first arose — probably at Constantinople. Anastatus Bibliothecarius mentions Pope Stephen III. as having first added one, containing three bells, to St. Peter's. That of St. Mark at Venice was begun in 902 ; though, in 1131, only finished to the bell-house ; that of San Zeno at Verona, begun in 1045, was finished in 1178 ; and the great tower in the Piazza at Verona was commenced in 1172.

“ Neither belfries nor baptisteries were considered as essential parts of, or embodied with, the church. On the contrary, like the baptistery, the steeple was placed at some distance from the house of worship.

"The severity of the climate beyond the Alps probably was the original motive for immediately connecting the steeple with the church on one side, as in the cathedral at Angoulême. The love of symmetry caused them, afterwards, to be built in front of these."

Chap. xxv. *Lombard Monastic Architecture*. In the early ages of Christianity, churches were the only buildings of consequence erected till Christian communities came into fashion, when monasteries were built.

These, like all private buildings in mild climates, consisted of "a square internal court, surrounded by a cloister, open to the air, which served at once for exercise, for coolness, and for communication between the different apartments, all made for the sake of privacy, before glass was invented, to look from the road or street to that court within; and if this arrangement differs from that of the private houses of the present day, the reason of the variation is, that while monasteries have during every age, in every latitude, remained the same, the form of private dwellings has experienced considerable changes. . . . The earlier cloisters of the Latin church are all in the Lombard style."

(*To be continued.*)

ART. II. *Mechanics of Fluids for practical Men, comprising Hydrostatics, descriptive and constructive: the whole illustrated by numerous Examples and appropriate Diagrams*. By Alexander Jamieson, LL.D., Author of "*Elements of Algebra*," &c.

"THIS volume is not a selection of shreds and patches garbled from contemporary authorities: but a systematic treatise on Hydrostatic Science, containing a vast mass of valuable and interesting facts, combining indeed almost all that needs to be known on the equilibrium of fluids. But for the convenience of reference, these mechanics of fluids are distributed into a series of chapters, whose titles indicate the several topics that receive mathematical demonstration. The first of these contains, besides a few brief but necessary definitions, the fundamental proposition upon which all the problems that are drawn up in elementary hydrostatics are in reality founded.

"The principle established in the general proposition enables the reader to proceed in the second chapter with the pressure of incompressible fluids upon physical lines, rectangular parallelograms considered as independent planes immersed in the fluid, and to determine the position of the centre of gravity of the various rectangular figures which the successive problems embrace, together with the pressures of fluids upon the sides and bottoms of cubical vessels, with the limits which theory assigns to the requisite thickness of flood-gates."

In this manner, a general analysis of the book is given in the Introduction, from which, and from the high reputation of the author, we should say that the work is one which ought to be in the possession of every civil engineer. The subject that we were most interested in, in looking through the work, and also that on which we were best able to form a judgement in a practical point of view, is the chapter "Of the pressure of non-elastic Fluids on Dykes and Embankments." See our article Embankment in the Supplement to the *Encyclopædia Britannica*, 6th ed. The subject of floatation, and of the centre of gravity of bodies floating in water, is also treated in a very satisfactory manner, and illustrated by numerous well executed engravings on wood.

Chap. xiv. treats of the centre of pressure, and to this are appended the following very interesting notes, on the subject of Artesian wells.

"Upon the pressure, cohesion, and capillary attraction of fluids that are heavy, depends their transmission through fissures of the earth and between its strata, which are pervious to the percolation of water. We can penetrate but a small distance, say 500 fathoms, in digging for coal; a less depth suffices for some ores, and water is found at all depths, from a few feet to three hundred, as in the neighbourhood of London. In the great coal area of Britain, extending lengthwise 260 miles, and in breadth about 150 miles, in a diagonal from Hull to Bristol in England, and from the river Tay to the Clyde in Scotland, we find a great variety of rocks of strata, piled up at a small angle, with the horizon, though in some instances, like the primitive, nearly vertical. These strata consist of sandstone, clayslate, bituminous slate, indurated argillaceous earth or fireclay, argillaceous ironstone, and greenstone or blue whinstone: and, to possess the valuable treasures concealed among these rocks, we employ a vast capital in money, and tax all the ability of the human mind in the science of engineering.

"To bring the subject-matter of capillary attraction, as regards Artesian wells, springs, mountainous marsh lands, or bogs, fairly before the reader in a very brief manner, we shall avail ourselves of a vertical section of the strata in Derbyshire, selecting our materials from the valuable work of Mr. Whitehurst, '*On the original State and Formation of the Earth*.'

"If the reader conceive the alluvial covering to be removed, the strata will at once appear on the upper surface, as in the external contour of the country between Grange Mill (s) and Darley Moor over number 1 and 2, in Derbyshire. Let now the numbers 1, 2, 3, 4, &c., represent the strata in their vertical position, bassetting towards (s), with the river Derwent running over a fissure filled with rubble in the centre.

"Then the upper stratum, or No. 1., at Darley-Moor, is *Millstone Grit*, a rough sandstone, 120 yards deep, composed of granulated quartz and quartz pebbles, without any trace of the animal or vegetable kingdoms.

"The next stratum, called No. 2., which descends to the Derwent, is a bed of *Shale*, or *Shiver*, 120 yards deep, being a black laminated clay, much indurated, without either animal or vegetable impressions. It contains ironstone in nodules, and the springs issuing from it are chalybeate, as that at *Buxton Bridge*, or that at *Quarndon*, and another near *Matlock Bridge*, towards *Chatsworth*.

"Next in succession we have No. 3., *Limestone*, 50 yards thick, productive of lead ore, the ore of zinc, calamine, pyrites, spar, fluor, cauk, and chert. This stratum is full of marine debris, as *anomia bivalves*, not known to exist in the British seas; also *coralloids*, *entrochi* or screw stones; and amphibious animals of the saurian, lizard, or crocodile tribe; some of which in a fossil state are of enormous size.

"Following this we have No. 4., a bed of *Toadstone*, 16 yards thick, but in some instances varying in depth from 6 feet to 600 feet. It is a blackish substance, resembling lava, very hard, with bladder holes, like the *scoria* of metals or Iceland lava. This stratum is known by different names in different parts of Derbyshire. At Matlock and Winster it is *toadstone* and *blackstone*; at Moneyash and Tidswell it is called *channel*; at Castleton, *cat-dirt*; and at Ashover, *black-clay*. This *toadstone*, *channel*, *cat-dirt*, and *black-clay*, is actually *lava*, and flowed originally from a volcano, whose funnel or shaft did not approach the open air, but which disgorged its contents between the (adjacent) strata in all directions, at a period when the limestone strata and the incumbent beds of millstone-grit, shale, argillaceous stone, clay, and coal, had a uniform arrangement concentric to the centre of the earth.

"Beneath all these we have No. 5., a *Limestone* formation, 50 yards thick, and similar to No. 3.; that is to say, laminated, containing minerals and figured

stones. It is productive of marble; it abounds with *entrochi* and marine exuviae; it was thence at one time the bed of a primæval ocean.

"No. 6., is *Toadstone*, 40 yards deep, and similar to No. 4., but yet more solid, showing that the fluid metal was more intensely heated and combined than No. 4.

"No. 7., *Limestone*, very white, 60 yards deep; laminated like Nos. 3. and 5., and like them it contains minerals and figured stones, and was either a continuation of Nos. 3. and 5., the entire mass having been split at different depths by the expansive power of the boiling lava.

"No. 8. is *Toadstone*, 22 yards deep, similar to No. 6., but yet more solid.

"No. 9. *Limestone*, resembling Nos. 3. 5. and 7.

"To this enumeration of the Derbyshire strata we must now add six other strata; too minute to be expressed in the same scale, but which are in fact the *capillary strata*, which we may liken to the glass plates referred to in Problem 71. Miners call these minute parallel strata, *clays*, or *way-boards*; in general they are not more than four, five, or six feet thick, and in some instances not more than one foot. They are the channels for water, and all the springs flowing from them are warm, like those at Buxton and Matlock Bath. The first stratum of clay separates Nos. 3. and 4.; the second, Nos. 4. and 5.; the third, Nos. 5. and 6.; the fourth, Nos. 6. and 7.; the fifth, Nos. 7. and 8.; the sixth, Nos. 8. and 9.: and what is very remarkable, by these clays the thickness of the other strata may be ascertained, which would otherwise be difficult, as the limestone beds consist of various *laminæ*.

"In other districts in Britain, we find that the coal formations sometimes repeat, in precisely the same order, and in nearly the same thickness, the following earths and minerals: sandstone, bituminous shale, slate clay, clay iron, stone, coal; or the coal is covered with slate, trap, or limestone, or rests upon these rocks. The strata generally follow every irregularity of the fundamental rock on which they rest; but in some instances their directions appear independent, both of the surface of the rock, and of the cavity or hollow in which they are contained, and in general take a waved outline, seldom rising greatly above the level of the sea.

"We have now, however, merely represented the general arrangement of the strata; not all the particular circumstances accompanying them, with respect to their several fractures, dislocations, &c.; but it will enable us to reason upon the chemical effects of water upon limestone and gypsum rocks, where we meet with caverns, caves, and extensive fissures, that reach sometimes to the surface, sometimes dip to a greater or less distance, and afford channels for great springs and subterranean rivers. These caves in the gypsum and chalk formations vary in magnitude from a few yards to many fathoms in extent, forming upon the surface of the ground, when their superincumbent roofs give way, those funnel-shaped hollows of such frequent occurrence in gypsum districts. The limestone strata, besides being 'loaded with the exuviae of innumerable generations of organic beings,' says Dr. Buckland, 'afford strong proofs of the lapse of long periods of time, wherein the animals from which they have been derived, lived, and multiplied and died, at the bottom of seas which once occupied the site of our present continents and islands.*' With how much reason then may we not suppose those formations to have held large beds of rock salt, which the percolation of water, in the lapse of ages, removed, and left the chambers empty, or the receptacles of meteoric water. The percolation of water through felspar rocks must of necessity wash away the alkaline ingredient, which combining with iron will form hydrate, or by its decomposition oxidate the metallic substance. Hence result chalybeate, acidulous, sulphureous, and saline springs, all the result of capillary attraction in the strata of the earth, and the disintegration by water of the various ingredients which the universal solvent holds in a state of fluidity.

"Supposing these cavities, to which we have just referred, to have been

* Dr. Buckland's *Bridgewater Treatise*, 1st ed., vol. i. p. 112—116.

freed from their original salt deposits, by water percolating the fissures leading to and from the masses of salt, we trace the operation of salt springs. For in all cases in which water holds any mineral in solution, it acts by combination, but where it simply destroys the mineral aggregation, the mineral falls into small pieces with an audible noise, as is observed in *bole*; or it falls without noise into small pieces, which are soon diffused through the fluid, without either dissolving in it or becoming plastic, as in *fuller's earth*, and some minerals, as unctuous clay; it renders plastic other minerals, absorbs water in greater or less quantity, by which their transparency, and also their colour, are changed.

"The toadstone, which intersects mineral veins, totally cuts off all communication between the upper and lower fissures, and by the closeness of its texture permits not the water in the clay strata, or *way-boards*, to filtrate. Hence toadstone is said to be capable of turning water, as we have shown in the shaft and gallery o a g g. Sandstone strata, of an open porous texture, becomes a great feeder of water. Several of the sandstones are, however, impervious to water, and almost all the beds of light-coloured argillaceous schistus, or fine clays, are particularly so, being very close in their texture. But the percolation of water at the beds or partings of two strata is an occurrence so general, that our wonder ceases when examining parts of the country where the strata basset or shoot to the surface in an acute angle, to find the alluvial covering in places swampy, marshy, and overrun with puddles, springs, and all that species of soil, which, being damp and cold, subjects its inhabitants to rheumatism, agues, and a train of diseases, unknown in regions that are not incumbent on the extremities of way-boards and capillary strata. The source or feeder of these subterranean capillaries receiving a constant supply, keeps up the train of human ills from one generation to another, while local interests or associations bind the natives to their hereditary doom.

"Capillary attraction and cohesion, besides expounding the phenomena of fluid ascent in strata of earth, direct us in penetrating those troublesome quicksands and beds of mud, which in the winnings of collieries are met with in mining, and where cast-iron tubing is employed to support the sand or mud-bed, and carry the water down to the bottom of the pit.

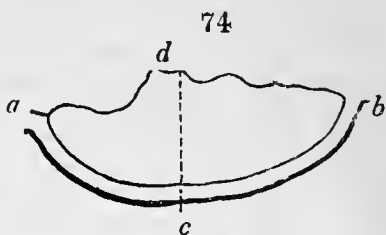
"Water stands higher in narrow than in wide glass tubes, but quicksilver mounts higher if the inside of the tube be lined with bees-wax or tallow. We can easily conceive that the lateral action may yet cause the perpendicular ascent; for it is a fundamental property in fluids, that any force impressed in one direction may be propagated equally in every other direction. Hence the affinity of the fluid to the internal surface producing the vertical ascent. A drop of water let fall on a clean plate of glass spreads over the whole surface, in as far as there is liquid to cover the glass, the remoter particles extending the film, yet adhering with the closest union. The adhesiveness of fluids is still more clearly shown in their projection through the pores of minerals, plants, animals, gravel, earth, and sand. Water rises through successive strata of gravel, coarse sand, fine sand, loam, and even clay: and hence, on the sea-coast, those quicksands, which have engulfed armies and ships, the pressure of the ocean at flood sending its advanced column up in the sand to a level with its surface a mile at sea. Gravel divided into spaces of the hundredth part of an inch, will allow water to ascend above 4 in.; it would mount up through a bed of 16 in. of this material, supposing sea gravel to be the 500th part of an inch. Fine sand, in which the interstices are the 2,500th part of an inch, allow the humidity to ascend 7 ft. through a new stratum; and if the pores of the loam were only the 10,000th part of an inch, it would gain the further height of 25½ ft. through the soft mass. Hence originate marine *syrtes*. Clay would retain the moisture at a greater altitude; but the extreme subdivisions of the clay, which enable it to carry water to almost any elevation, yet make it the most efficient material in puddling or choking up the interstices of masonry.

"The ascent of water in a glass tube is due chiefly, we think, to the excess

of the attractive power of the glass above the cohesive power of the fluid mass over itself. Were the attractive and cohesive forces equal, the fluid would remain balanced at a common level. Mercury hence sinks, by reason of the strong cohesive power of its own particles. Hence we account for mercury closing over a ball of crude platinum, which, nevertheless, being gently laid on the mercury, will float, although its specific gravity is above that of mercury.

"It is, however, the province of chemistry, rather than of mechanics, to measure the cohesive power possessed by different fluids, or by the same fluid under different degrees of temperature.

"The suspension of water in any stratum through which it can percolate, must depend entirely upon the smallness of the upper orifice, or superficial extent of the deflection with which the stratum slopes off horizontally above ground and upon the relative elevation of the extremities of the impervious stratum. Thus, suppose a and b (*fig. 74.*) to be two extremities of a stratum pervious to water; the central column of water at c is pressed with the whole weight of the space bc , and this pressure upon c pushes the fluid out at a by the excess of force in bc above that in ca ; and therefore, while the ground or land at b is generally dry, that at a is perhaps boggy; at all events it will exhibit springs at its surface, be cold, damp, and its inhabitants subject to rheumatism or agues. A column of water of this description may occupy a space of many miles extent between b and a ; and c may be many hundred feet deep below the horizontal level of a . In digging for water at d , we should find it at c .



"The cohesion of the particles of water, and its extreme facility to obey any impression, fit it admirably for percolating through fissures of the earth, when in the tenderest filaments it is detached from the general fluid mass, and penetrates only by the laws of capillary attraction from one point to another in an extensive stratum of clay, precisely as if it flowed through a pipe in passing from one hill to another. Hence the certainty with which we meet with water in boring to a proper depth in the earth, and hence also the origin of Artesian wells, which finely expound the varied phenomena of a retreating and subsiding column towards the body of the fluid, as if an equal and opposite pressure from the sides of a capillary tube had come into action. We may hence infer that, in strata pervious to water, the capillary ascension, however much it may be accelerated or retarded by the parallel sides of the stratum and the material of which it is composed, is governed by these three principles which we have fully discussed, pressure from above, cohesion subsisting among the particles of the liquid, and attraction of the parallel sides of the stratum. Were this attraction equal to the antagonist cohesion, the fluid would remain at rest, balanced at a common level, till overcome by the weight of the contents in the longer branch of the fluid column forcing the contents of the shorter column out at the discharging orifice. All the springs which are below the London clay, at the depth of 150, 200, 250, or 300 feet, are fed by sources considerably elevated above the Hampstead level. With what ease then might the metropolis be provided in every street with fine spring water.

"In the year 1791, the vicar of Northall (Mr. Archdeacon Eaton) agreed with Mr. White of Putney, to sink a well in the court adjoining to the vicarage.

"The workmen first dug through a bed of solid blue clay, 60 ft. in depth; under which was a stratum of rough porous stone, about a foot thick.

"To this succeeded a second stratum of clay (differing a little from the former in colour), 29 ft. in depth; then a stratum of fine grey sand, intermixed with extraneous fossils, as oyster shells, bivalves, &c.

"This stratum continued for 23 ft., and was succeeded by another of clay of a red or ferruginous colour, less firm in its consistence than that which

occurred before, and intermixed now and then with gravel and stones of a considerable size.

“ ‘ After digging through this stratum for 51 ft. (at the depth of 164 ft. from the surface), water was found, which, on the removal of the stone which lay immediately over the spring, burst up with such force, and in such abundance, that time was scarcely given for the signal to be drawn up. Within the first four hours of its discovery the water rose to the height of 80 ft.; and in the next twenty-four hours about 40 ft. more; after which it continued to rise gradually for the next fortnight, till it reached its present level, which is only 4 ft. from the surface of the earth, the depth of the water being now 160 ft.

“ ‘ The inhabitants of Northall have free access to this well.’

“ ‘ At Munday’s brewery, Chelsea, a well was dug, in the year 1793, to the depth of 394 ft., within 20 or 30 feet of the edge of the river, mostly through a blue clay or marl.

“ ‘ At the depth of about 50 ft., a quantity of loose coal, about 12 in. in thickness, was discovered; and a little stratified sand and gravel was found about the same depth. The well-digger usually bored about 10, 15, or 20 feet at a time lower than his work, as he went on; and on the last boring when the rod was about 15 ft. below the bottom of the well, the man felt at the first signal of water a rolling motion, something like the gentle motion of a coach passing over a pavement; and upon this he continued to bore; the water presently pushed its way by the side of the auger with great force, scarcely allowing him time to withdraw the borer, put that and his own tools into the bucket, and be drawn up to the top of the well. The water soon rose to the height of 200 feet.’ (*Middleton’s Middleser.*)

“ ‘ On the west of a small brook which runs by Kilburn and Bayswater, in the parish of Paddington, where the soil is deep clay, the springs lie very far beneath the surface. On the sinking of a well here some few years ago, by Mr. Colson, the workmen dug nearly 300 ft. before they found water. In sinking this well, the workmen dug through a bed of bluish clay to the depth of about 100 ft., when after passing a thin stratum of stone, they came to another bed of clay of the same quality and colour, through which they dug without further interruption till water was found, at a depth of about 300 ft. from the surface. In digging another well in the same neighbourhood, water was found at the depth of 250 ft., which rose with great rapidity till it came within 70 ft. of the surface, after which it continued to rise very gradually a few feet higher, at which height it stopped.’ ” (p. 463.)

MISCELLANEOUS INTELLIGENCE.

ART. I. *Domestic Notices.*

ENGLAND.

HOUSE-PAINTING.—A very simple method has lately been adopted to render the surface of paint perfectly smooth, and eradicate the brush marks. It is done by a small roller covered with cloth or felt, 8 in. long and 2 in. in diameter, worked in an iron frame on pivots, similar to the common garden-roller. The flattening coat by this method is made beautifully even, and looks exceedingly well. (*Athenæum*, Nov. 4. 1837.)

Two Medals for the Encouragement of Civil Architecture.—A gift for this of 500*l.* has been made to the Society of Arts, by a lady whose name has not transpired. (*Morning Chronicle*, Nov. 15.)

Formation of a School of Design in Manchester.—A short time ago, a number of gentlemen of this town, sensible of the importance of a school of design in this great emporium of art and manufactures, assembled and formed a provisional committee for the purpose of taking the steps necessary to originate

such an institution. At first it was contemplated that it should be a branch of the recently founded school of design in the metropolis; but much disappointment was experienced on finding that there the mechanics were debarred from an equal share in the privileges and studies of the school, and it was ultimately determined that the Manchester School of Design should be a wholly separate and independent institution. At a general meeting of gentlemen favourable to the establishment of a school of design in Manchester, convened by the provisional committee, an animated debate took place. James Heywood, Esq., chairman of the provisional committee, presided, and opened the proceedings. In the course of an excellent speech, he stated that from time to time many efforts had been made by individuals to improve the fine arts in Manchester by their own exertions, and he thought great praise was due to those persons; but very little had hitherto been done by any public body, for the improvement of the arts of design. The Mechanics' Institution had come forward more directly than any other body, having formed classes in several departments of design; as mechanical, architectural, flower, figure, and landscape drawing; and in 1835 the class for mechanical and architectural drawing had an average attendance of 33 pupils; and that for landscape, flower, and figures, of 64 pupils. He hoped these classes would continue to prosper; but what was now wished to be effected was, the formation of a society having for its sole and peculiar object to improve the arts of design, an object sufficient to occupy the whole time and attention of a society with reference to the improvement of those manufactures in which design is required; and also in the education of persons to direct the mechanical powers of this great community. Elsewhere such objects were thought of great importance. Lyons, which rivalled Manchester in many respects, and exceeded it in the taste of its inhabitants in design, had regular schools of design, in which particular attention was paid to the departments of flower and ornamental drawing. When at Lyons some years ago, he had obtained an account of the subjects proposed for prizes in an exhibition, where prizes to the amount of 20*l.* or 30*l.* were given for drawings and paintings. Those subjects were:—coloured drawing, including ornaments, figures, and flowers, in the same composition; groups of coloured flowers; selections of plants, drawn after nature, slightly shaded, of the natural size; the plants separated, so as to exhibit the principal details of flower and foliage under different points of view, not as botany would require them to be exhibited, but as they would be considered most beautiful in art.

Mr. T. W. Winstanley read the following report of the provisional committee:—

“The diffusion of knowledge, in whatever department of science it takes place, is a subject of great interest to every lover of public improvement; and the formation of a school of design, in the town of Manchester must tend to its commercial, as well as classical, prosperity, and must also prove beneficial to the inhabitants of the surrounding towns.

“Manchester, as the great emporium of human industry and production, creates within herself a considerable demand for the decorative and ornamental departments of design, in the operations of calico printing, fancy weaving, and embroidering. Individuals employed in these branches of art require an institution for the improvement of taste, and for the encouragement of harmonious conceptions of beauty in form. Such an institution is equally requisite for students in civil engineering, to whom precision of design, and the skilful use of instruments, in surveying, planning, &c., are essentially necessary in their professional pursuits.

“It has been well remarked, by the Baron Charles Dupin, in his advice to manufacturers, and to the foremen of workshops, that the only efficient means to encounter competition is to manufacture goods really better than all our competitors.

“Superiority in manufacture depends, in a great measure, on the fortunate exercise of taste, economy, industry, and invention. The establishment of a

school of design, in Manchester, is recommended, in order to enhance the value of the manufactures of this district, to improve the taste of the rising generation; to infuse into the public mind a desire for symmetry of form, and elegance of design; and to educate, for the public service, a highly intelligent class of artists and civil engineers.

“Impressed with these views of affording encouragement to the cultivation of the arts of design in Manchester, the present meeting has been called, in the confident expectation, that a society will now be formed for that object, and that the patronage of this influential and wealthy community will not be wanting to the successful execution of a plan which promises so much advantage, both to individuals and to the public.”

Mr. J. W. Frazer, in proposing the first resolution, expressed his belief, that not only here, but in other parts of the country, art had for some time made no progress, and that the works of art produced a century ago in England were of a higher grade than those of the present day. Why was this? Because we were more in the habit of copying than inventing.—(Hear, and applause.) Sir Joshua Reynolds had said, that the more conversant we were with the works and compositions of others, the more original would be our own ideas; and that it was only by seeing so little of others, we did so little ourselves. Again, we were fond of any thing by which we could escape that labour of thought — invention; as, for instance, getting hold of one pattern, endless changes were rung upon it; and, out of the thousands of patterns engraved in Manchester for calico-printers, or produced in the loom, there were very few original ideas to be found; for the moment one was started, others caught it up. It should be borne in mind, that the object of this institution would not be to draw patterns, but to qualify persons for inventing them. To give them the power of developing their ideas in drawing, care must be taken as to the mode of instruction. Mr. Fairbairn had told him that young men in his workshop, who could draw very well with line and compass, could not sketch, could not develop an idea. The instruction to mechanics must be of a kind to enable them to sketch with facility, and so to develop their own ideas, or to catch and carry off others when committed to them. Mr. Frazer dwelt on the importance of a study of the human figure, as giving power, and an appreciation of beauty of form, to every branch of design. It was desirable, that this school should be upon an economical principle, and within the reach of almost every one. It was thought unadvisable to make the admission so expensive as that at the school of design in London; and, though nothing had been adopted, 5s. a quarter, or 1*l.* a year had been proposed.

Mr. Richard Birley, in moving the fourth resolution, was disposed to question the propriety of having the admission very low; for it was of more importance, in his opinion, to secure the very best masters, and then they would easily get students to pay more. He knew a case of a young man, who, because he could not get sufficiently instructed at the Mechanics' Institution, had private masters, at a cost which he could not well afford, that he might secure for himself the best instruction. If the admission were low, then a large subscription of members would be required, in order to have the best masters.

Mr. Louis Schawbe, in moving the fifth resolution, said that he had recently been engaged in fancy weaving, and he believed he had produced as good work, in his particular branch, as any house in England. He was the more friendly to this institution, and the more ready to support it, as he must confess that, were it not for the little instruction he had received in the art of drawing, he should never have been able to attain to that eminence in his manufacture. He hoped the admission would be as low as possible. The town in Germany in which he had been educated was a small one, containing not more than 8000 or 9000 inhabitants; and, though it had no school of design, it had a general school, in which drawing formed a part of the institution; and at this school all attended, whatever their profession or trade. The admission was very low; and, the master's salary being defrayed by government, the

payments of the pupils were applied to providing things in the school for their use. It might be amusing to hear the price paid by the scholars. He had two lessons weekly in drawing, for which he paid 10*d.* a month; and he had some extra lessons from the master, who was considered a very clever man; and for four extra lessons weekly, he paid 6*s.* a month. He hoped that the masters in this school of design would be paid by government, so that the admission might be a low one; as the importance of a knowledge of drawing to every one engaged in manufactures was so very great, that he had no doubt the country would be repaid, by the beauty and value of our future manufactures. He had no doubt, that the study of the figure would be very important; at the school at which he had been educated, it was left to the choice of the pupils; and, though not insensible to the advantages of figure drawing, he hoped the choice of studies would be left in the hands of the pupils themselves.

Mr. Joseph Adshead, in seconding the resolution, said that great praise was due to Mr. Hance and Mr. G. Jackson, for their indefatigable exertions in calling public attention to this subject. He thought the cheaper the institution offered, the more likely it would be to be generally diffused. He had no doubt, that, in a few years, the institution would be second in utility to none in the town.

It was also observed, that when a new design for weaving was wanted, it was generally obtained from a French silk, or from some German weavers settled in England; and it was proposed that a memorial should be signed praying government to assist the institution with casts from the British Museum.

Mr. Bostock moved the ninth resolution, "That classes for the instruction of females in the fine arts be established, under suitable teachers;" and said he thought this an extremely desirable object, especially in connexion with manufactures; as females of fine taste, and well instructed in art, might be employed in producing various elegant and beautiful designs, highly acceptable to calico-printers and to manufacturers. (*Manchester Guardian*, Feb. 21. 1838.)

SCOTLAND.

EDINBURGH. — *Effects of the Lightning on the Melville Monument, struck on the 14th of July, 1837.* (See Vol. I. p. 200.) — The following particulars are curious : — The door which leads to the outer plinth at the top of the monument, immediately below the statue, fell to the bottom the instant the monument was struck; but, upon being inspected about threequarters of an hour afterwards, there did not appear any of the usual effects of the electric fluid upon the ironwork or otherwise. The key of the door below, which leads to the top of the monument, was obtained, and upon entering it no appearance of damage could be discovered. On reaching the top of the stair, however, it was found that the stones which form the apex of the central part of the monument, upon which the stair rests, and which are perforated from the cupola to the bottom, on purpose to admit the conductor, were dislodged. The conductor was a chain, part of which was discovered still hanging at the top of the cupola, immediately underneath the statue. The rest of the chain was not to be seen, but upon descending to the bottom, and looking underneath the centre, upon which the stair is fixed, the chain was found in a heap, quite hot, and having a white calcined appearance. It would appear, therefore, that the door had not been struck by the lightning, but had been forced out by the concussion, arising from the aperture, which leads down through the centre of the stair from the top of the monument, being too small to admit the shock; which circumstance causing a momentary interruption, had had the effect of dislodging the stones at that place for a couple of yards, wresting the door from the hinges, and breaking the chain. From all these circumstances it would appear that the conductor saved the monument. (*Caledonian Mercury*.)

ART. II. *Reply of M. F. A. Bernhardt, Architect, to the official Report of Dr. Ure, F.R.S., on his new System of Warming and Ventilating, published in the "Architectural Magazine" for January, 1838.*

IN replying to the attack made by Dr. Ure in the *Architectural Magazine* of January (p. 31.), upon my new system of warming and ventilating, and myself, I can only be sorry that a gentleman of his high standing and medical reputation should have so far forgot himself as to use language which, I am sure, none of the readers of the *Architectural Magazine* will have approved of, and which Dr. Ure himself, on reflection, must find blameable and unjust. Far be it from me to impute any bad motive to Dr. Ure's late publication of his report to the Hon. Board of Customs; and, taking it only in a scientific point of view, I will as briefly as possible confine myself to the exposition of its fallacies; and, against any future attack, simply refer to my actions, and the various works I have executed.

In the publication of his report, Dr. Ure acted very unfairly not to inform the readers of the *Architectural Magazine* of the time when he examined Lord King's house; for, though the said report is dated November 23. 1837, the examination took place as early as July; and every architect and scientific man will allow that neither that month, nor when the walls of a new house have just been covered with plaster, is the fit time for judging of the effects of a warming apparatus, except its effects of drying. The air-flues, &c., necessary in my system of warming and ventilating, were finished in Lord King's house on the same day on which the last coat of plaster was put on the walls of the servants' hall (basement story); and on the same day (July 15.), likewise, the fires in my apparatuses were lighted for the first time. Lord King wishing to move into his mansion at the beginning of September, and there being still much to be done by Mr. Cubitt, the builder, I was obliged to satisfy both, and to dry the house in as short a time as possible. I therefore ordered the fires to be forced (for I did every thing in my power to oblige His Lordship, whose house, but for my regulations, would not have been dry and inhabitable, perhaps, for six months to come), and requested Mr. Cubitt to withdraw his workmen from the house; assuring him that they would risk their lives if they dared to work in the same whilst the overheated air, charged with moisture and the lime vapours extracted from the walls and plaster, was in circulation. The temperature of the atmosphere at that time was 72° ; and, therefore, no wonder, when, in consequence of the large fires which were kept up day and night, the air in the apartments was raised as high as 95° . It would not otherwise have been possible perfectly to dry Lord King's house in three weeks, a thing without parallel; and I challenge Dr. Ure to point out to me any other system of warming and ventilating capable of producing the same effect in the time specified. Many of the leading architects, doctors of medicine, and other scientific men, passed the highest eulogium on my plan as exhibited at the said mansion; and a nobleman of Scotland, happening to be present on such an occasion, took me with him to Scotland in order to apply it to his residence, where Mr. Silvester's regulations had totally failed. Returning to town, I heard of Dr. Ure's examination of my plan, which had taken place during my absence; and that he had spoken very unfavourably of it. The workmen who told me this, not having, previously to Dr. Ure's visit, heard anything but what was favourable, and that, too, from really competent men, were rather amused by his exposition. Among other things, they told me he had put his thermometer *into the smoke-pipe*! He himself says, in his report, that, having put solder *into the lower pipes* (which, as I learn, remained there all the night, the fires in the same being always up), he found it not only melted, but oxidised. Dr. Ure wonders at this, though it is quite natural; for, not only solder, but even metal, will melt in my fires, and for very obvious reasons. It does, however, not follow that the air outside must be bad because the fire

inside burns so well, except when the latter is expressly kept up for *drying* ; in which case even, the air is better than that of any other apparatus, on account of the incessant circulation and continual supply of fresh air. Every gentleman will certainly agree with me that, before publishing such an important document as the report in question, Dr. Ure should have as minutely as possible enquired into the subject ; which he, however, omitted. He saw my apparatus, in the first instance, when heated to the highest possible pitch ; from which point his judgment emanates. He saw my regulations, in the second place, when no fires at all were lighted ; when he would, however, by paying anything like attention to the subject, have perceived that, notwithstanding the icy coldness of the stoves, the *ventilation was going on* as well as ever. He, in the third place, declined an examination of my system in my presence, at which I would have given every explanation required, by pleading “want of time.” Did Dr. Ure, after this, act nobly towards a foreigner, who never interferes willingly with any one, and least of all with medical science, and who almost shrinks from defending himself ? If my system of warming and ventilating strikes at the root of every other, can I help it when I interfere with the interests of many, against my will ? At p. 34. of the *Architectural Magazine*, Dr. Ure says, that “in one of the stoves there were 16 pipes,” whilst there are only 12, and the other three apparatuses are much smaller. Two of the fireplaces are each 18 in. long, 8 in. wide, and 8 in. high. Can in such little space much fuel be consumed ? Had Dr. Ure postponed his examination till January last, he would have found that the apparatuses are not a foot too large ; that the air is most delightful, and that it can be regulated at pleasure ; and Lord King’s house is, moreover, not so small as represented : it contains more than 200,000 cubic feet of air. Dr. Ure evidently shows, by his writings and the said report, that he has never practically had anything to do with warming and ventilating ; his theoretical opinions must therefore, through that very want of practice, be erroneous. (If he has ever warmed and ventilated any building, I must beg his pardon for being ignorant of it.) Without practical knowledge of warming and ventilating, no one can be surprised when he, in his own words, “acknowledges himself incapable of discovering either the novelty or the worth of my scheme,” having seen so many similar ones on paper. For more than twenty years, I have made the science of warming and ventilating my exclusive study, and, through my persevering exertions and unremitting labours, have been crowned with the most happy and wished for results ; yet have I never flattered myself with the hope of quickly establishing the truth and infallibility of my plans, because I know how difficult it is to introduce anything new. I hold it wrong myself rashly to adopt, but more so rashly to condemn, a new doctrine ; but, first to examine it carefully, shows much prudence ; and to support it when found worthy, is evidence of genius and a truly great mind ; and I am happy to say that I have met with many of the latter.

Dr. Ure says that I am but very slenderly acquainted with the principles of warming and ventilating ; to which I cannot better reply, than by referring to the various works I have executed. If Dr. Ure had any practical knowledge of warming and ventilating apartments, he would have known beforehand what effects would be produced by the stove he put up in his bed-room, and which might have caused his premature death. I am sure, many of the readers of the present paper would have told him the consequences if he had consulted them beforehand. Can it be healthy where there is no ventilation ? and is there any kind of stove to be put in a room that produces effective ventilation ?

With regard to the accumulation of soot in my apparatuses, Dr. Ure, as in all his statements, is equally wrong ; for it is not necessary to clean the apparatuses in Lord King’s house more than twice or thrice a year ; and, if my apparatuses, according to circumstances, need cleaning oftener than the chimneys at present in use, it is much more easily done, in the basement story only, and without the necessity of climbing boys. The soot which is thus deposited in, and so easily removed from, my apparatuses, would otherwise

impregnate the atmosphere; and, consequently, an additional advantage is derived. Were my plan generally adopted, thousands of fires would be unnecessary, danger of fire so many thousand times diminished, and the atmosphere, now so injurious, and productive of consumptions, would be rendered clear and healthy.

Security against fire is one of the chief recommendations of my plan; and I beg to observe that many of the buildings which have recently been destroyed by fire would not have become a prey to the flames if they had been provided with my plan of warming, ventilating, and lighting. I can adduce an instance where it has been tried to set fire to a house with my stove, adapted to single or several rooms; but, though the wooden handle of the door, 4 in. distant from the iron, was totally burned, and the back of the stove cracked, yet it was found impossible. Any gentleman who has the opportunity of examining my regulations in Lord King's house will find my assertion borne out, and that with my plan no fires can happen. As to the expense of the flues in Lord King's house, I must observe that I usually order them to be made of brick, which is ten times cheaper than the use of slates. Lord King, however, who is well acquainted with architecture, knew beforehand that the slates were more expensive than bricks, and adopted Mr. Cubitt's suggestion to use the former, on account of their not taking up so much room.

To speak of the inevitable failures, immense expense, danger, trouble, and waste of fuel, of the warm-water and steam apparatuses, which Dr. Ure finds so highly commendable, is quite unnecessary, the subject is too well known to require any further exposition.

The, as it were, living witnesses which I am going to point out to the readers of the *Architectural Magazine*, will fully prove, though my plans may be apparently similar to others, its entire novelty and never failing efficacy; and will render it superfluous to analyse further Dr. Ure's hasty report. I can only add, that I regret very much not having been honoured with the examination of my regulations by the members of the Hon. Board of Customs, who, I am sure, would have been fully satisfied with my plan, as well as the many who have adopted it; and I am proud to say that, in recommending my system, I have invariably referred to works of mine already in existence. Had these works been wanting, I should not have received the certificates annexed.

In concluding this very unpleasant duty of defending myself, I hope that every impartial gentleman will see how unjust and ungentlemanly are the observations of Dr. Ure at the end of his letter.

I beg finally to refer all friends of science to the following particulars of what I have done in warming and ventilating, and of which I shall speak more amply in a pamphlet now preparing for that purpose; hoping that, after careful examination, they will lend their assistance in the diffusion of a most beneficial discovery.

92. *York Road, Lambeth, Feb., 1838.*

F. A. BERNHARDT.

P.S. As to what passed between Dr. Ure and the friend who introduced me to him, I am ignorant of it; but, if the gentleman (Thomas Griffin, Esq., of Cheltenham) advised him not to publish an unfavourable report on my system of warming and ventilating, it could only be well meant, and given in a friendly spirit.

Description of Buildings warmed and ventilated by my Plan, and a few Circumstances connected with the same,

From an advertisement which appeared in the newspapers in the autumn of 1836, I received a letter from Lady Webster, at Battle Abbey, near Hastings, with an invitation to come down, in order to examine several apartments of the Abbey, and to warm and ventilate them according to my plan. On inspection, my attention was particularly directed to an arched room, 58 ft. long

and 21 ft. wide, which, according to the report of Lady Webster's builder, an elderly gentleman, and other persons acquainted with the place, had always been so wet and damp as to render it uninhabitable, and only fit for the exhibition of antiquities, &c.; and, to judge from its appearance, I should say that it had been in that state ever since it was built, about 800 years ago. The said room had, in the year before (1835), been newly painted; the paint was, however, soon, by the water penetrating through the walls, changed into a mass of bladders, which, bursting, let the water out. The first question which Lady Webster addressed to me was, whether I thought myself capable of drying this room; assuring me that several attempts had been made for this purpose, but all in vain. When, in presence of the builder, I replied that I would undertake it, and that I would guarantee to dry the apartment in a very short time. He said quite candidly he did not believe it, for it was impossible to dry a building, the foundation of which was so swampy. Lady Webster, however, observing that she had already read in the public journals of what I had done in the Royal Palaces of Berlin, ordered, on my assurance not to demand payment if I failed, an apparatus to be put up. The apparatus having been erected, and the fire lighted, the water, in a few hours, poured down the walls and arches in such quantities, that it was taken out by pailfuls. Lady Webster was afraid this would continue, as the builder maintained that the water proceeded from the foundation. Being, however, assured by me that it would last only a few days, she was satisfied, and I returned. A couple of days after this, I had the pleasure of receiving the following letter from Lady Webster:—

“ M. Bernhardt,

“ The arched room, I am glad to say, is perfectly dry, and the two rooms above sufficiently warm. You have there accomplished what you undertook to do, and I am quite satisfied. Yours, &c.,

“ *Battle Abbey, February 28. 1837.*

C. WEBSTER.”

At the recommendation of an architect of the first rank, I substituted for an ineffective steam apparatus one of my stoves in the library of Sir George Smart, for the purpose of drying his valuable musical books, which by the former plan had become damp; as also to warm the room pleasantly, and which could not be obtained by the old plan. The usual success attended my operations; and I may be allowed to ask if a system of warming and ventilating can be unwholesome and bad, if such results are obtained; and when by it a healthy, pleasant, and ever-changing air is introduced into the room?

The same nuisance as above, dampness and nauseous smell, I have removed in other places; but, having given two instances, I do not think it necessary to enumerate more.

At the house of Mr. A. Black, No. 8. New Wellington Street North, my plan has been in operation for more than two years, to the perfect satisfaction of Mr. Black, who wishes no other fires in its stead. I may here be allowed to refute Dr. Ure's charge, that my apparatuses consume more fuel than any other at present known. Mr. Black has in his large kitchen an apparatus upon which meals of all kinds can be prepared, with which the warm water necessary for the wants of the family is supplied, and with which the kitchen, the shop, the warehouse, the drawingroom, and two bedrooms are warmed and ventilated, and all this at the expense of one shilling per day. Is there any cheaper plan? In the smaller kitchen of Mr. Black's house, one of my patent stoves, with an open fire, is put up, and used for the following purposes; namely, the roasting of meat, and the warming of the kitchen, the passage, and staircase from the bottom to the top of the house, the back drawingroom, and two rooms above it. The whole of Mr. Black's house is thus, with the exception of two small rooms, in which there are common fire-grates, thoroughly warmed and ventilated by these two apparatuses.

Dr. Ure will find these stoves with open fires quite different from the one

he put up in his room, and which acted so very injuriously on his health. They, for instance, *never* smoke, simply because they are constructed on unerring scientific principles.

The house of Mr. P. J. Meyer, Laurel Lodge, Hammersmith, has been provided with my warming apparatus; and, besides its efficiency for kitchen purposes, it warms the two passages, two staircases, two drawing and two bedrooms. It has been in operation these two years, and is now in as active operation as ever, to the entire satisfaction of Mr. Meyer, who, as well as Mr. Black, will be glad to show my regulations to any gentleman who will let him know his intention to inspect the same.

Having warmed and ventilated the private residence of Mr. Currie, the eminent banker, I had the pleasure to receive the following letter from Mr. Barry:—

“Foley Place, Wednesday Morning.

“Sir, I am happy to inform you that Mr. Currie is satisfied that nothing can answer better than the means you have applied for warming his house at East Horsley. Yours faithfully,

“CHARLES BARRY.”

About three years ago, my system of warming and ventilating was examined by some of the first architects of this country; and I was honoured with the inspection of my plan by several noblemen, and some of Her Majesty's ministers, who all highly approved of it. The architect, Mr. Hiert, who had dedicated many years' study to the subject of warming and ventilating, and the draught of smoke, was very much pleased with the regulations I had adopted in my house; and, in a lecture delivered in the Institute of British Architects, acknowledged his satisfaction with my plan. I had at that time the pleasure of receiving several orders from the leading architects, which I value very highly, inasmuch as it will be evident to every one that practical architects are more capable of judging of the merits of any plan, than a person who has collected his knowledge from books only. When, last year, I was enabled to show my system on a larger scale in Lord King's house, I had again the pleasure of seeing there many architects, and other scientific gentlemen, who all, as before mentioned, expressed *their entire satisfaction with it*. My regulations having also gained to me the confidence of Mr. Charles Barry, I had the pleasure of seeing myself honoured, at his recommendation, through Sir Benjamin Stephenson, with the order to apply my system of warming and ventilating to the new committee-rooms of the late Speaker's house.

The perfection, or imperfection, of any system can be determined and judged of by feeling or sensation only; and a minute description of my plan, as applied to the Speaker's house, is therefore unnecessary. But I beg to invite the readers of this Magazine to its inspection, in order to judge by their feelings of its efficacy. Whoever has seen the cloister before, will know how cold and damp it was; whereas he will at present, though my regulations are not totally finished, and the doors and windows are left open, find it dry, sufficiently warm, and habitable in all parts; and, like the many who daily sit and walk in its passages, not refuse his share of approbation.

Those who have formerly been in the late Speaker's dining-room will know that a very unpleasant smell was constantly diffused in it last year. In order to get rid of this nauseous smell, an immense fire was kept up day and night, but to no purpose; at present the room is dry, warm, and filled with pure air. When asked by Sir Benjamin Stephenson whether I could do away with the said bad smell, I assured him that I could, and that, in case of failure, I would claim no payment for my regulations. If I was not sure of the efficacy of my plan, would I undertake guarantees like this?

In the Speaker's house, every one may convince himself that my regulations for warming and ventilating are without danger of fire; that it is even impossible to set fire to a building by the same, if it were attempted. As a proof of the truth of this assertion, it will be found, in the committee-room No. 12.,

that the ventilators, quite near to the hot pipes by which the air is warmed, are fixed in wooden frames. In order to dry the committee-rooms Nos. 11. and 12. quickly, the fire in the stove was, like that in Lord King's house, and without any further security against destruction, kept up to the highest possible pitch day and night; so that the temperature of the air was raised to 112° and more, and the walls of the rooms became pretty much heated. The air which passed through the wooden frame was above 170° ; notwithstanding which, not the least appearance of inflammability was observable, and it remained unmoved in its place. The only disadvantage which arose to me from this forced drying was, that the upper part of the stove, cast iron, 2 in. thick, was cracked, and that a new stove had to be supplied. The same case happened with a second stove, for the same reasons. This second stove warms the five rooms above the crypt (or late Speaker's dining-room) and passage, containing about 55,000 cubic feet of air; a mass of about 1,500,000 cubic feet of air is therefore warmed in twenty-four hours by one of my apparatuses, and passes through the rooms day and night, constantly renewing the atmosphere in the same. That such a change of air must exercise a wholesome influence on the health of the gentlemen who assemble in the said rooms, will be obvious. The said mass of air requires, during twelve hours, $1\frac{2}{3}$ bushels of coals in the coldest winter time, to be warmed in such a manner as to keep the temperature constantly up to 65° .

The temperature of the air in the committee-rooms can be regulated and kept up at pleasure; and, for the information of the honourable members of parliament, notices have been put up on the doors of the said rooms, by which they are desired to order any temperature between 48° and 65° which they like best. This will prove to Dr. Ure that there must be a good ventilation; and I ask him to show any building, warmed by steam or hot water, in which there is the same command over the temperature; or in which it is in the power of the fire-keeper to produce and keep up the desired temperature without creating a perceptible draught, as is done in the committee-rooms. Would such a ventilation be possible if there were no change of air, and if the foul air remained at the bottom like filth and mud in water? I beg every one, who would convince himself of what I have said here, to go to the late Speaker's house, and visit a committee-room with an open fire when crowded; then to visit one of the rooms warmed and ventilated on my plan; and to make a comparison. If the trouble were taken to put an equal number of persons in two rooms containing equal masses of air, I am convinced that every impartial man would acknowledge my ventilation to be more perfect than any other. For this purpose, I would propose one of the dining-rooms ventilated on my plan; for the ventilation of the other rooms is partly unfinished, and partly disordered by the alteration of several of the rooms. Thus, for instance, one room has been made use of as a smoking-room for the honourable members; and it will be obvious that a ventilation adapted to a room for about thirty or forty persons cannot possibly answer the purpose of leading off the smoke, as it is necessary: carbonic acid gas and smoke are two totally different matters. It would therefore be wrong to judge of my ventilation, destined to supply for respiration the purer and consequently lighter air (in this respect, very near the property of smoke) from above, so that nothing but pure, light, and pleasant air is breathed, and passes to the lungs, by producing smoke in a room ventilated according to my system for respiration only, either by tobacco, gunpowder, or any other substance. Every one will agree with me, that a room, to be used as a smoking-room, requires a totally different ventilation from all those at present known. By means of my discoveries, I am enabled to satisfy every wish with regard to ventilation, and, consequently, also to ventilate a smoking-room in a perfect manner. The following, however, shows at the same time how strictly my directions must be executed, if a perfect ventilation is to be obtained; as, also, that there must be some theory, of which Dr. Ure thinks me so devoid, to give such positive, infallible, and experimental directions for ventilation.

The openings of the air-flues to one of the lamps in the dining-room were, against my order, instead of being to east and west, made to north and south; most likely with the belief that it was quite the same to have the openings the one way as the other: the consequence, however, was, that the lamp was blown out in this one flue, and not in the three others in the same room, which were made according to my directions. After the reversion of the openings of the said flue, it acted as well as the others.

The many experiments, for years and years, have shown, how difficult it is, without the knowledge of the true laws of nature, to effect an agreeable ventilation, and to know that the least alteration in a building, or its neighbourhood, can render faulty the best ventilation. Of all this Dr. Ure is innocent, else he would not have judged and condemned my ventilation so hastily.

The warming and ventilating of M. Scheibler's large silk manufactory and residence at Crefeld, on the Rhine, I reckon amongst the most important of my works: the system has been there in operation for more than four years, to the satisfaction of all inmates. Mr. A. Black of New Wellington Street, as well as M. T. A. Wortmann of 9. Cirencester Place, Portland Road, who are familiarly acquainted with it, will confirm my statement if applied to.

The invariable success which, for the last ten years, attended my operations, procured, me among a number of others, the following certificates:—

From His Majesty the King of Prussia.

"By His Majesty's command, this testimonial is given to the architect, M. F. A. Bernhardt, that he has remedied the inconvenience of smoky chimneys in the Royal Palace, as well as in private houses, although all former attempts to do so have proved ineffectual.

"(Signed) V. SCHUCHMANN,
Minister for Commercial Affairs."
"Berlin, April 22. 1831.

From the first Architect in Germany.

"M. Bernhardt has, by his process, removed the inconvenience of smoky fireplaces, both in rooms and kitchens, wherever it was troublesome, to the greatest satisfaction of the occupiers. In proof of which I send him this testimonial.

"SCHINKEL,
Chief Director of Buildings."
"Berlin, Sept. 6. 1832.

"That the architect M. F. A. Bernhardt, one of the founders and members of the Leipzig Polytechnic Society, in grateful acknowledgment of his strenuous exertions to forward trade and industry with all his powers, has, by the members of the said Society, unanimously been named deputy of the same; and, also, that in this capacity he has rendered himself highly meritorious, by his advice and assistance, is hereby certified, with thankful acknowledgment, and in full truth.

"Leipzig, in the Month of May, 1829. "OTTO K. ERDMANN, Director.
"The Directors of the Leipzig Polytechnic Society." "G. WOLBRECHT, Secretary.

This certificate will convince Dr. Ure that I was in Saxony.

Testimonial.

"I hereby certify that M. F. A. Bernhardt of Düsseldorf, architect, has been particularly recommended to me, from the most respectable quarter, as a person who may be strictly relied upon, and possessing undoubted skill in his profession; and, also, that it especially appears, by the testimonials which he laid before me, and which are granted by unquestionable authorities, that he

has succeeded, at several places in Prussia, in bringing into practice his invention for the conducting of smoke, with the most successful results.

"London, December 30. 1833.

" (Signed) BULOW,
Ambassador of the King of Prussia.

"Certificate for the Architect M. F. A. Bernhardt of Düsseldorf."

"Friday, March 2. 1838.

"Dear Sir, I was much gratified, on Saturday last, in witnessing your mode of warming and ventilating rooms at the Speaker's house. The feeling of warmth and dryness of the rooms is particularly agreeable; and, from your simple but excellent plan of keeping a constant renewal of the air without producing draughts, must be greatly conducive to its purity and wholesomeness. Your plan of regulating the supply of warm and cold air seems to be excellent; and, as one of the chief causes of foulness of the air in crowded rooms is the quantity of carbonic acid gas thrown off from the lungs of those breathing in the room, your method of causing this (which, being heavier than air, falls to the bottom) to be carried off by holes at the bottom of the room, is good, and certainly more likely than any other I have seen to produce the effect of keeping the air in the room wholesome.

"I shall be very glad to hear of the general adoption of your plan, and, in mean time, remain, &c.

" (Signed) NATH. GRANT, M.D.

"21. Thayer Street, Manchester Square.

"To M. F. A. Bernhardt."

ART. III. *Retrospective Criticism.*

MR. HUMPHREY's *Suggestions as to Models of Style, &c.*, (p. 49.)—I shall not attempt to follow Mr. Humphreys through all the reasonings of his "Suggestions," &c., contained in your last Number. If architects have been so much led astray from the mark, and are so wide in their attempts at Gothic, it is not by writing that the evil is to be corrected, but by example; and an executed design will have a far more powerful influence than whole volumes of essays. In fact there is not an amateur traveller, or a writer with some facility of composition, who does not mistake a partiality for architecture for an innate purity of taste, and a power to discriminate and apply, and he then begins to lecture the architects, as men who do not know what they are about.

Never was critic more mistaken than is Mr. Humphreys, in thinking that he has been the first to suggest that Mr. Barry should have consulted the *Hotels de Ville* of Germany and the Low Countries, as models for his Houses of Parliament. Mr. Barry *did* study these monuments, and spent a fortnight in those countries for the purpose of preparing his mind by the contemplation of those fine works, before he made out the drawings of his magnificent conception. That Mr. Barry's design is not a mere copy, that he has combined, and admirably too, the peculiarities of the styles of these countries with that of England, and thus produced a new combination of the excellencies of both, has misled Mr. Humphreys, who did not see in the imposing general mass of Mr. Barry's design the main feature of the *Hotels de Ville*, and in the details such a reference to English models as produced an amalgamation at once novel and effective.

Never did man better deserve by the efforts of his genius the selection made by the Commissioners; never did man gain a prize in a more honourable manner as regards his own conduct. But the various attacks which have been made upon him, whether in reference to his judgement, his taste, his honour, his integrity and good faith, have been unceasing and unsparing. I trust he sees few of them, for they are enough to quench the ardour and perseverance of any man. To carry out into execution so vast and complicated

a work, is surely a sufficient tax upon the noblest and firmest spirit, and, instead of our discouraging him, we should do all in our power to brace his energies, to excite his ambition, to confirm in him a confidence of his own powers. This alone can enable him, with all his energies, to complete a work which shall render this age illustrious for its taste in architecture, reflect credit on our national character, and stamp himself as worthy the high task, which has been confided to him. In spite of every adverse circumstance, he must and will realise the best anticipations of those who know, and who, knowing, esteem and admire him. — *M. I. B. A. Feb. 1838.*

Mr. Parsey and his Critics.—Perpendiculars. It is amusing to read the different ideas of different individuals on the convergence of perpendiculars. I will even risk the presumption of asserting that there is a mixture of truth and error in all I have yet read on the subject. All that Parsey, Edmonds, Candidus, Kata Phusin, and Pocock have said or sung on the matter, may be finally settled by the following questions and answers, in the plain “why and because” style, which even those who know nothing of the subject cannot misunderstand:—

1. Do perpendiculars converge?—Yes.

2. Why do they do so?—Because it is a law in optical mathematics, that all objects diminish in proportion to their distance from the eye; and every object we look at establishes its truth.

3. This being the case, should not perpendiculars be represented in perspective as converging?—Certainly not.

4. Indeed! would you then represent a tower 100 ft. in height, equally as wide at the top as at the bottom, while you might be 103 ft. from the former and only 10 ft. from the latter; and would not this be inconsistent with your second answer?—Now, I shall solve the difficulty. No one can represent a tower of that height, while standing at a distance of 10 ft. from the base; because, the eye cannot, without moving, take in objects at a greater angle than 60° ; therefore, before a tower of 100 ft. in height can be represented, I must be *nearly* 100 ft. from it; then, the *difference* of the distance from my eye to the top, and to the base, of the tower is so small, that the convergence is imperceptible.

5. So far good. But why must you be *just* “nearly” 100 ft. from the building?—Because, if my eye were level with the base, I must be *wholly* 100 ft. Now, my eye is supposed to be 6 ft. above that level, and that is the reason; and if my eye were at a point exactly 50 ft. above the level of the base, then, to represent the tower, I must at least be at that distance from it which will bear the same proportion to its height that the side of a square does to the hypotenuse. Of course, I may be at any greater distance I please.

6. Why “*at least*” at that distance?—Because then the ray from the eye to the top, and the ray to the base, would both be exactly of the same length as the height of the tower (forming an angle of 60°); and the eye would be at the apex of a cone, the diameter of the base of which would be 100 ft., while the length of each ray forming the same would also be 100 ft.

7. Is there any other reason why perpendiculars should not converge?—Yes, technically speaking; because they are perpendicular to the imaginary horizon of the picture, and parallel to its sides.

8. Why then are parallel horizontal lines in angular perspective represented converging, while parallel perpendiculars are not?—Because the surfaces which they bound or circumscribe, are obliquely presented to the plane of projection, that is, the plane of the picture.

9. Then do parallel lines, when they present themselves parallel to the plane, converge?—Yes.

10. Should they be so represented?—No; for exactly the same reasons as given for the tower: for we must consider the eye a point, without reference to where our head or feet are; as, if we were to lie on our side while looking at a range of buildings parallel to the plane, we would then have a figure similar to the tower, which would, of course, be subject to the same laws.

11. It would then appear that Candidus is wrong?—Yes; because the laws of optics, and, indeed, all the objects we see, contradict his theory.

12. Parsey then of course is right?—No. In this particular, he is only right so far as he contends for the convergence: he is wrong in his representation of perpendiculars for the reasons given to Question 4.

13. Is Edmonds then, who opposed him in some points, right?—No. He has followed the errors of Mr. Pocock, together with some new ones of his own, respecting the appearance of pictures, and the hanging of them, which are not in accordance with the foregoing reasons.

14. Is Kata Plusin right?—Yes, in the chief points; but not strictly so in the minor ones: and the same remarks may apply to Mr. Pocock.

15. How far do the minor points of the latter two gentlemen vary from truth?—In my opinion, so far as they differ from the substance of the foregoing answers; which, to my mind, are as plain as it is that two and two make four.

16. Has Candidus acquitted himself from the charge of error, by Parsey and others, in his rejoinder to them?—No; he is equally inconsistent throughout. In his first paper, he distinctly denies the convergence of perpendiculars; in his rejoinder, p. 140., he says he never disputed that the system was theoretically correct; and in p. 141., he actually admits that he did deny the convergence of perpendiculars, but “*meant*” something—something, in fact, which he did not state.

17. Is Candidus right in his remarks (though, of course, ironical) respecting the representation of the Tower of Babel?—No; he is positively wrong; because, in proportion to the height of the object, so must be the distance between the object and the eye that views it; consequently, the vertical lines of this *great* Tower ought to be as free from convergence in the representation, as those of a two-story house, the same principle governing both. (See Answer to Query 4.)

18. Is Candidus’s remarks with regard to the cut at p. 91., of the Glyptotheca at Munich, correct?—No; the position of the horizon in that representation may not be in the most happy, or best selected, situation; but it is not “*erroneous*.” His position would hold good if we could only view objects when we stood on a level with their base.—Q. *March*, 1838.

Candidus on Mr. Parsey’s Principles, &c.—Candidus is indignant at being accused of disputing Parsey’s principles theoretically, and complains that he has been misunderstood. He has just cause of complaint, if he did *not* mean to say that perpendiculars appeared non-convergent to the eye. I believe him to be suffering under a calamity, to which men of talent are peculiarly exposed, that of not knowing exactly what he did, or does, mean. If he first “denies the convergence of vertical lines,” and then tells me that “all he meant was, that it was not perceptible,” he should not be surprised at my replying to what he *said*, before he had told me what he *meant*: and his meaning is no meaning, even now, for the convergence of verticals is as much perceptible as that of any other lines. He ought to mean, and, I believe, does, if he could find it out, that, where such convergence can be represented, it is imperceptible, and where it is perceptible, cannot be represented. And, if Candidus is anything of a draughtsman, he ought to know that the theory is *not* unimportant because impracticable. None can be daring or dexterous in practice who are not thoroughly acquainted with the most speculative principles of theory; and I believe I could give him several problems, which all his knowledge of perspective could not solve, without the assistance of the principle which he spurns. Here let the subject rest, since it seems we all agree now that we understand each other; and it has occupied several pages of this Magazine already, having itself nothing to do with architecture. Parsey will not turn the world upside down, as Candidus dreads; every true artist being about as well aware of what is right, as that revolutionising gentleman. And now let Candidus allow (unless he requires to be put in mind of Corydon’s warning, “*Quamvis tu Candidus esses, O formose puer, nimium ne crede colori*”),

that he expressed himself obscurely; and Kata Phusin will beg to be permitted to advance *his* name, as an apology for his eagerness in the support of a theory which, he is willing to allow, is not so much *kata technē*, as it is — *Kata Phusin*. Oxford, March 5.

The Chancel of Stratford Church. (p. 139.)—Considering that the opinion of an architect upon a subject of taste connected with his own works is one to which little weight can be attached, I offer no further observation on the criticism of B., than that the defect of the omission of a straight tie at the foot of the principal rafters; and “the principle being more like that of an arch depending on the side walls for abutments*,” if a defect, is equally chargeable on the majority of good specimens of timber roofs erected at the same period, as that of the chancel of Stratford Church; and, to any one who will attentively examine the building, it will be evident that such was the case with the original roof of this chancel. Of roofs constructed upon similar principles, several exist in the halls and ecclesiastical edifices of this country; which, in the case of Stratford Church, is considerably strengthened by the introduction of iron ties and stays, concealed in the carved spandril, and by queen-bolts in the mouldings, forming the tracery of the roof without resorting to so objectionable a proceeding as introducing a tie-beam across the window, or destroying the external character and picturesque effect of the building by raising the walls. Of its full sufficiency for the purposes of strength, I had an opportunity of satisfying myself by a careful examination of the work a few weeks since, it having now been finished more than twelve months.—*Harvey Eginton*. Worcester, March 8. 1838.

Glyptotheca.—I am glad that my reference to Dr. Granville’s account of this building has called forth H. N. H.’s remarks, although I cannot help thinking him rather premature in terming it “florid,” when by his own admission he has not seen the work. He appears to misunderstand the cause of my admiration, which was not produced by the mere circumstance of its being built entirely of marble, but by the purity of its style, the excellence of its arrangements, and the grandeur of the whole design. Nor do I rest solely on Dr. Granville’s account, for his statements have been fully confirmed by descriptions I have had of the Glyptotheca, from friends on whose judgement I can rely; and who, having seen it, speak with equal enthusiasm of its merits.

The following extract, which Dr. Granville gives at the end of his own description, from a recent English writer (whose name he does not mention) will show that others differ from the opinion which H. N. H. has formed of this edifice. “The contrast between this building and the appearance of the vast hall at the British Museum, built for the reception of the Elgin Marbles, nay, even of the galleries of the Vatican and the Louvre, is most striking, and tends to prove that the Baron Klenze has been successful in his bold and arduous undertaking.”—*G. B. W.* London, Feb. 23. 1838.

Errata.—P. 107. line 5. from the top, for “about one mile and a half,” read “half a mile.” P. 109. line 27. from the top, for “15 ft.,” read “18 ft. $\frac{3}{4}$ in.”

Institute of British Architects deferred for want of room.

*“The timber roofs of our ancestors, in the style called Norman or Gothic, were generally made without horizontal ties at the feet of the principal rafters, and were intended to be supported by the walls, as an arch is supported by its abutments; the heavy walls, they were in the habit of erecting in the Norman style, and the skilful disposition of buttresses in the Gothic, rendering ties unnecessary. Besides, a tie-beam would have been wholly incompatible with their mode of finishing the interior of a building.” (*Tredgold on the Construction of Roofs*, p. 86.)

THE
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ORIGINAL COMMUNICATIONS.

ART. I. *The Poetry of Architecture.* By KATA PHUSIN.

NO. 2. THE COTTAGE. — Concluding Remarks.

“Nunquam aliud Natura, aliud Sapientia, dixit.” JUV.

IT now only remains for us to conclude the subject of the Cottage, by a few general remarks on the just application of modern buildings to adorn or vivify natural scenery.

There are, we think, only three cases in which the cottage is considered as an element of architectural, or any other kind of beauty, since it is ordinarily raised by the peasant where he likes, and how he likes; and, therefore, as we have seen, frequently in good taste.

1. When a nobleman, or man of fortune, amuses himself with superintending the erection of the domiciles of his domestics. 2. When ornamental summer-houses, or mimicries of wigwams, are to be erected as ornamental adjuncts to a prospect which the owner has done all he can to spoil, that it may be worthy of the honour of having him to look at it. 3. When the landlord exercises a certain degree of influence over the cottages of his tenants, or the improvements of the neighbouring village, so as to induce such a tone of feeling in the new erections as he may think suitable to their situation.

In the first of these cases, there is little to be said; for the habitation of the domestic is generally a dependent feature of his master's, and, therefore, to be considered as a part of it. Porters' lodges are also dependent upon, and to be regulated by, the style of the architecture to which they are attached; and they are generally well managed in England, properly united with the gate, and adding to the effect of the entrance.

In the second case, as the act is in itself a barbarism, it would be useless to consider what would be the best mode of perpetrating it.

In the third case, we think it will be useful to apply a few general principles, deduced from positions formerly advanced.

All buildings are, of course, to be considered in connexion
VOL. V. — No. 51. o

with the country in which they are to be raised. Now, all landscape must possess one out of four distinct characters.

It must be either woody, the green country; cultivated, the blue country; wild, the grey country; or hilly, the brown country.

1. The Woody, or green, Country. By this is to be understood the mixture of park, pasture, and variegated forest, which is only to be seen in temperate climates, and in those parts of a kingdom which have not often changed proprietors, but have remained in unproductive beauty (or, at least, furnishing timber only), the garden of the wealthier population. It is to be seen in no other country, perhaps, so well as in England. In other districts, we find extensive masses of black forest, but not the mixture of sunny glade, and various foliage, and dewy sward, which we meet with in the richer park districts of England. This kind of country is always surgy, oceanic, and massy, in its outline: it never affords blue distances, unless seen from a height; and, even then, the nearer groups are large, and draw away the attention from the background. The under soil is kept cool by the shade, and its vegetation rich; so that the prevailing colour, except for a few days at the fall of the leaf, is a fresh green. A good example of this kind of country is the view from Richmond Hill.

Now, first, let us consider what sort of feeling this green country excites; and, in order to do so, be it observed, that anything which is apparently enduring and unchangeable gives us an impression rather of future, than of past, duration of existence; but anything which being perishable, and from its nature subject to change, has yet existed to a great age, gives us an impression of antiquity, though, of course, none of stability. A mountain, for instance (not geologically speaking, for then the furrows on its brow give it age as visible as was ever wrinkled on human forehead, but considering it as it appears to ordinary eyes), appears to be beyond the influence of change: it does not put us in mind of its past existence, by showing us any of the effect of time upon itself; we do not feel that it is old, because it is not approaching any kind of death: it is a mass of unsentient undecaying matter, which, if we think about it, we discover must have existed for some time, but which does not tell this fact to our feelings, or, rather, which tells us of no time at which it came into existence; and, therefore, gives us no standard by which to measure its age, which, unless measured, cannot be distinctly felt. But a very old forest tree is a thing subject to the same laws of nature as ourselves: it is an energetic being, liable to and approaching death; its age is written on every spray; and, because we see it is susceptible of life and annihilation, like our own, we imagine it must be capable of the

same feelings, and possess the same faculties, and, above all others, memory: it is always telling us about the past, never pointing to the future; we appeal to it, as to a thing which has seen and felt during a life similar to our own, though of ten times its duration, and therefore receive from it a perpetual impression of antiquity. So, again, a ruined tower gives us an impression of antiquity: the stones of which it is built, none; for their age is not written upon them.

This being the case, it is evident that the chief feeling induced by woody country is one of reverence for its antiquity. There is a quiet melancholy about the decay of the patriarchal trunks, which is enhanced by the green and elastic vigour of the young saplings; the noble form of the forest ailes, and the subdued light which penetrates their entangled boughs, combine to add to the impression; and the whole character of the scene is calculated to excite conservative feeling. The man who could remain a radical in a wood country is a disgrace to his species.

Now, this feeling of mixed melancholy and veneration is the one of all others which the modern cottage must not be allowed to violate. It may be fantastic or rich in detail; for the one character will make it look old-fashioned, and the other will assimilate with the intertwining of leaf and bough around it: but it must not be spruce, or natty, or very bright in colour; and the older it looks the better.

A little grotesqueness in form is the more allowable, because the imagination is naturally active in the obscure and indefinite daylight of wood scenery; conjures up innumerable beings, of every size and shape, to people its alleys and smile through its thickets; and is by no means displeased to find some of its inventions half-realised, in a decorated panel or grinning extremity of a rafter.

These characters being kept in view, as objects to be attained, the remaining considerations are technical.

For the form. Select any well-grown group of the tree which prevails most near the proposed site of the cottage. Its summit will be a rounded mass. Take the three principal points of its curve; namely, its apex (*c*), and the two points where it unites



itself with neighbouring masses (*a* and *b*, *fig.* 75.). Strike a circle through these three points; and the angle contained in the segment cut off by a line joining *a* and *b* is to be the angle of

the cottage roof. (Of course we are not thinking of interior convenience: the architect must establish his model of beauty first, and then approach it as nearly as he can.) This angle will generally be very obtuse; and this is one reason why the Swiss cottage is always beautiful when it is set among walnut or chestnut trees. Its obtuse roof is just about the true angle. With pines or larches, the angle should not be regulated by the form of the tree, but by the slope of the branches. The building itself should be low and long, so that, if possible, it may not be seen all at once, but may be partially concealed by trunks or leafage at various distances.

For the colour, that of wood is always beautiful. If the wood of the near trees be used, so much the better; but the timber should be rough-hewn, and allowed to get weather-stained. Cold colours will not suit with green; and, therefore, slated roofs are disagreeable, unless, as in the Westmoreland cottage, the grey roof is warmed with lichenous vegetation, when it will do well with anything; but thatch is better. If the building be not of wood, the walls may be built of anything which will give them a quiet and unobtruding warmth of tone. White, if in shade, is sometimes allowable; but, if visible at any point more than 200 yards off, it will spoil the whole landscape. In general, as we saw before, the building will bear some fantastic finishing, that is, if it be entangled in forest; but, if among massive groups of trees, separated by smooth sward, it must be kept simple.

2. The Cultivated, or blue, Country. This is the rich champagne land, in which large trees are more sparingly scattered, and which is chiefly devoted to the purposes of agriculture. In this we are perpetually getting blue distances from the slightest elevation, which are rendered more decidedly so by their contrast with warm corn or ploughed fields in the foreground. Such is the greater part of England. The view from the hills of Malvern is a good example. In districts of this kind, all is change; one year's crop has no memory of its predecessor; all is activity, prosperity, and usefulness: nothing is left to the imagination; there is no obscurity, no poetry, no nonsense: the colours of the landscape are bright and varied; it is thickly populated, and glowing with animal life. Here, then, the character of the cottage must be cheerfulness; its colours may be vivid: white is always beautiful; even red tiles are allowable, and red bricks enduring. Neatness will not spoil it: the angle of its roof may be acute, its windows sparkling, and its roses red and abundant; but it must not be ornamented nor fantastic, it must be evidently built for the uses of common life, and have a matter-of-fact business-like air about it. Its outhouses, and pigsties, and dunghills should, therefore, be kept in sight: the

latter may be made very pretty objects by twisting them with the pitchfork, and plaiting them into braids, as the Swiss do.

3. The Wild, or grey, Country. "Wild" is not exactly a correct epithet; we mean wide, unenclosed, treeless undulations of land, whether cultivated or not. The greater part of northern France, though well brought under the plough, would come under the denomination of grey country. Occasional masses of monotonous forest do not destroy this character. Here, size is desirable, and massiness of form; but we must have no brightness of colour in the cottage, otherwise it would draw the eye to it at three miles off, and the whole landscape would be covered with conspicuous dots. White is agreeable, if sobered down; slate allowable on the roof, as well as thatch. For the rest, we need only refer to the remarks formerly made on the propriety of the French cottage.

Lastly, Hill, or brown, Country. And here, if we look to England alone, as peculiarly a cottage country, the remarks formerly advanced, in the consideration of the Westmoreland cottage, are sufficient; but, if we go into mountain districts of more varied character, we shall find a difference existing between every range of hills, which will demand a corresponding difference in the style of their cottages. The principles, however, are the same in all situations, and it would be a hopeless task to endeavour to give more than general principles. In hill country, however, another question is introduced, whose investigation is peculiarly necessary in cases in which the ground has inequality of surface, that of position. And the difficulty here is, not so much to ascertain where the building ought to be, as to put it there, without suggesting any enquiry as to the mode in which it got there; to prevent its just application from appearing artificial. But we cannot enter into this enquiry, before laying down a number of principles of composition, which are applicable, not only to cottages, but generally, and which we cannot deduce until we come to the consideration of buildings in groups.

Such are the great divisions under which country and rural buildings may be comprehended; but there are intermediate conditions, in which modified forms of the cottage are applicable; and it frequently happens that country which, considered in the abstract, would fall under one of these classes, possesses, owing to its peculiar climate or associations, a very different character. Italy, for instance, is blue country; yet it has not the least resemblance to English blue country. We have paid particular attention to wood; first, because we had not, in any previous paper, considered what was beautiful in a forest cottage; and, secondly, because in such districts there is generally much more influence exercised by proprietors over

their tenantry, than in populous and cultivated districts; and our English park scenery, though exquisitely beautiful, is sometimes, we think, a little monotonous, from the want of this very feature.

And now, farewell to the cottage, and, with it, to the humility of natural scenery. We are sorry to leave it; not that we have any idea of living in a cottage, as a comfortable thing; not that we prefer mud to marble, or deal to mahogany; but that, with it, we leave much of what is most beautiful of earth, the low and bee-inhabited scenery, which is full of quiet and prideless emotion, of such calmness as we can imagine prevailing over our earth when it was new in heaven. We are going into higher walks of architecture, where we shall find a less close connexion established between the building and the soil on which it stands, or the air with which it is surrounded, but a closer connexion with the character of its inhabitant. We shall have less to do with natural feeling, and more with human passion; we are coming out of stillness into turbulence, out of seclusion into the multitude, out of the wilderness into the world.

ART. II. *On the System and Principles pursued by the Gothic Architects, from the Eleventh to the Fifteenth Centuries inclusive, in the Embellishment by Colour of the Architectural Members and other Parts of their Religious and Civil Edifices.* By FREDERICK LUSH.

“Colour and form alike their powers engage
 In trophies of the proud baronial age;
 Azure and crimson, green and gold unite,
 Friezes and chapiters, in glory dight,
 Blaze with imposing splendour o’er the sight.
 Enamell’d flowers their graceful foliage twine,
 And pictured mouldings thread the golden vine:
 Fair in their form, and glorious in their hue,
 They blend harmonious, and the mind subdue.”

J. EDMESTON.

ONE of the strongest feelings that are common to our nature is curiosity; and anything that is new, or grand, or beautiful, is apt to raise this appetite, which will be satisfied only by investigation. We cannot fail to be struck with that power and greatness of talent which are displayed in our cathedrals; but it is when overawed by the solemnity imparted to these piles by the brilliancy of colour, and the effect produced by their painted windows, that we would fain know the principles which guided the artists of these noble conceptions.

Without loitering at the threshold of this essay by enquiring into that which is foreign from my design (namely, the extent to which the art of colouring their buildings obtained among the ancients, or whence it was derived), I will proceed at once to

enter it; the subject being one that is worthy of the architect, and not devoid of interest to the antiquary.

Although the monastic life may justly be blamed, and the learning of the monk is often deemed useless, yet it is to the former we owe almost every thing connected with literature and the fine arts; and on the latter rest our after acquirements in knowledge. Long before the time when the venerable Bede lived and wrote, the light that now shines with such brightness in our own days shed her influence over the land; but its force was not enough to dispel the gloom of superstition, which then overshadowed the cloister. There were, however, in his age, schools where architecture, sculpture, and painting grew and were fostered with care; and, censure, as we may have cause to do, the conduct of the monks, it was, in truth, this set of men who were good architects; and they were not only the authors of many valuable treatises on science, but the chief artists who painted ecclesiastical buildings in fresco.

Contemporary with Bede was Benedict Biscop, a monk, founder of the monastery at Weremouth, and one of the first who introduced the arts into England. Biscop was wont to repair to Rome, and thence brought over several artists, who, as Bede tells us, constructed his church after the Roman fashion. He also sent to France for those skilled in making and staining glass, with which he ornamented the church of St. Peter, belonging to the Abbey of Weremouth; but before that period, at which the manufacture of glass was unknown in Great Britain, the windows of the most costly buildings had been filled with fine linen cloth or latticed woodwork. (*Stuart's Dict. of Architecture.*)

Archbishop Wilfrid, in the year 674, built the abbey church of St. Mary, at Hexham, which is a fine instance of Anglo-Saxon architecture. (A view is given by Mackenzie in his *Hist. of Northumberland*, 4to, 1825; and in the *New Monasticon*.) It is thus described by Richard de Hexham, a historian who flourished A. D. 1180, when it was still remaining (I quote only so much as is proper to my object):—"The walls themselves, with the capitals of those columns which supported them, as also the coved ceilings of the sanctuary, were decorated with histories, statues, and various figures projecting in sculpture from the stone, with the grateful variety of pictures, and with the wonderful beauty of colours." (*Stuart's Dictionary.*) In this and later periods, the inside of the churches was one mass of splendour; but the sanctuary was the centre of attraction: the shrines, the statuary, the lofty screen before the high altar, the painted ceiling, all form a scene, which, whilst it is quite consonant with the imposing rites of the fane, kindles awe and begets high emotions. As in the churches erected by Constantine in By-

zantium, Asia Minor, and Syria, the roof was ornamented with tiles of gilt brass, and the walls, the columns, and pavements incrustated with variegated marbles; so, in these early churches, built on the plan of the basilicas, large stone and marble columns, or columns faced with thin laminæ of marble, sustained the roof, which was covered with lead or gilt tiles. The church of St. Germain des Prés, one of the oldest in Paris, begun by Childebert in 557, was in the shape of a cross; and, if we may rely upon the description by Gislesmer, a monk of the abbey, its ceiling was gilt, the walls set off with colours on a gold ground, the pavement composed of rich mosaic, and the roof covered with gold. (*Whittington's Historical Survey of the Ecclesiastical Antiquities of France*, &c.: 4to, 1809.)

The era of Charlemagne gave rise, it is true, to many edifices; but they may, perhaps, be regarded great as to their size alone. His palace and church at Aix-la-Chapelle present a debased style, similar to that which prevailed in Italy and Rome itself. The most costly and beautiful columns were placed beneath diminutive arches, and high masses of wall were disfigured with rude painting, or had glittering, but gaudy, mosaic work. The intellect of the architect seems to have been clouded: at any rate, it did not shine with that lustre which broke forth in the eleventh century, when the various cities and provinces, especially of France, strove to outvie each other in works of architecture.

There was one, born about 925, whom I would notice by the way: his name was Dunstan. He was a good scholar, and master of all the mathematical science then known; besides which, he used to practise painting and engraving, and took impressions from metals. "Præterea nam aptus ad omnia, facere potuit picturam, litteras formare, scalpello imprimere ex auro, argento, ære, et ferro." — *Gervasius de St. Dunstano*. (*Pownall's Essay on Ancient Painting in England*, vol. ix., in the *Archæologia*.) This same man, St. Dunstan, designed a pattern for a sacerdotal vestment, which a religious lady worked in threads of gold. In the same century, a drapery on which were delineated the actions of Brithnod, duke of Northumberland, was presented by his widow, Edelfleda, to the church of Ely; and before this, Witlaf, King of Mercia, in a charter to the Abbey of Croyland, gave, among other things, a golden veil, embroidered with the siege of Troy, to be hung up in the church on his birthday.* Thus we learn that the

* *Pictorial History of England*, p. 320. l. 11. — The exterior vestibule of the church of St. Sophia at Constantinople, built by Justinian, was hung with aurea vela, vela auro contexta et variegata. Gregory of Tours, describing the baptism of Clovis at Rheims, writes:—"Velis depictis adumbrantur plateæ ecclesiæ. Curtinis albis adornantur." — *Hist. Franc.*, 11. 31. (*Whittington*, as above.)

arts of embroidery were employed for adorning religious houses; and, since their wall hangings were often very gorgeous, we may infer that they heightened the character of those buildings. Amongst females of the higher ranks, embroidery was considered an accomplishment: nor was the other sex behindhand in the art of painting; and to those who excelled in it much respect was paid.

Pardon, reader, the foregoing digression; but by it a chasm is filled up in this history, or rather sketch, which serves only to usher in that which more immediately concerns us. I think not it is in nowise related to what has gone before and follows, since, in the middle ages, tapestry sometimes supplied the place of painting on the walls; though, perhaps, there are materials of a more pertinent kind, which have not crossed my path.

In the eleventh century, the walls and ceilings of the castellated palaces and churches were of wainscot, ornamented with gilding and painting. In these cathedrals, where the Norman style prevailed, the roofs were composed of wood in rafters only; but, as architecture improved, they were connected by panels, which were plastered or painted blue, with gold stars, as we find in ancient crypts; and sometimes painted in a kind of mosaic of several colours. (*Warton's Hist. of Poetry.*) Stubbs, in his *Actus Pontificum Eboracensium*, when speaking of the works performed under Archbishop Aldred, shortly before the Conquest, says: "Totam ecclesiam a presbyterio usque ad turrim ab antecessore suo kinsio constructam, superius opere pictorio quod cælum vocant auro multiformiter intermixto, mirabile arte construxit." (*Pownall*, as above.) The old Canterbury Cathedral partially rebuilt by Lanfranc, and completed by Anselm, who evinced equal, if not more taste and ability than his predecessor, is recorded as having been so glorious, that no building in England could vie with it, whether as regarded the transparency of the glass windows, the brightness of the marble pavement, or the elegance of the paintings, which drew the eyes of all beholders to the roof above. (*William de Malmesbury.*)

The two celebrated abbeys at Caen, that of St. Stephen built by William the Conqueror, about the year 1068; and that of the Holy Trinity, by his queen, Matilda; were fine examples of the Norman style. On the outside of the wall of a chapel, built before the Abbey of St. Stephen, were painted in fresco the figures of King William, his queen, and their two sons, Robert and William, supposed to have been coeval with its foundation. Matilda, in the year 1082, endowed the Abbey of the Holy Trinity, called *l'Abbaye aux Dames*, founded for Benedictine nuns, with so much munificence, that William de Poitiers, Archdeacon of Lisieux, said she enriched it more than any emperor had done in the preceding time. (*Ducarel's Anglo-Norman Antiquities.*)

Not before the latter part of the twelfth century (that is, between the years 1177 and 1199, when the nave of Peterborough Cathedral was erecting), have I lighted upon any record of colour, either in religious or civil edifices. The ceiling of Peterborough Cathedral was at the same time painted, and was of wainscot, formed into three main compartments; each being again separated by lozenges and half lozenges. The fillets, mouldings, and rosettes were gilt; a fret antique ran round the panels as a border; and on the wood within this were the painted figures, which were, in the opinion of the individual who repaired the ceiling, oil, as the colours became clear to the eye upon a sponge being applied. Gov. Pownall, however, asserts that oil was not the vehicle in this case, as both size and other varnishes were known in the twelfth century; but adds, "The discovery of an oil varnish, or the drying oils used in limning, was not, I believe, yet brought forward."*

The very old painting in Westminster Abbey, over the tomb in which are deposited the wooden images of our ancestral kings, most unjustifiably ycleped the Ragged Regiment, and among them Sebert, who originally founded Westminster Abbey, is acknowledged to be coeval with the refoundation of the abbey by Henry III., in the fifth year of his reign. It was painted on a piece of wainscot, paneled in different compartments, and bore a rather strong rubbing with a wet handkerchief. Underneath the plaster, which crumbled betwixt the fingers like chalk, a coat of parchment was glued upon the paneling. (*Pownall*, as above.)

Availing ourselves now of the passages which refer to colouring edifices, among the documents in the Pipe and Close Rolls of the reign of Henry III., inserted in Walpole's *Anecdotes of Painting*, we read, in the twelfth year of Henry III., that his treasurers and chamberlains are commissioned to pay to a certain painter 20s. for painting the great Exchequer Chamber. The next record intimates the kind of painting to be undertaken:—

"Anno 1233, 17 Henry III., Mandatum est Vicecomiti Southton, quod Cameram regis lambruscatam de castro Winton, depingi faciat eisdem historiis et picturis quibus fuerat prius depicta, &c.

"1233. Payments, anno 17 Henry III. Precept to the Sheriff of Southampton, that he shall cause the king's chamber wainscot, in Winchester Castle, to be painted with the same pictures as formerly," &c. From this precept, it is very plain that the wainscot in the apartments of royal dwellings was painted with historical subjects, sacred or profane; and, as such histories are

* Pownall, as above.—There existed, Le Noir informs us, at Paris, in several religious houses, paintings in fresco, and with white of eggs, which had been executed in the twelfth century.

desired to be renewed, it leads us to conclude that the custom was known some time before this period : and in the 35th of Henry III. a mandate is given for painting the history of Antioch : but of this anon. Raspe, *On the Discovery of Oil-Painting*, p. 52., says, on the authority of the *Domesday Book*, that “ the history of the royal household, of the board of the king’s works, of the English painters, sculptors, architects, and other artists, may be traced backward far beyond the time of King Henry III., nay, even beyond the period of the Norman conquest, in the eleventh century ; and that there is no occasion for looking upon the first painters and other such artists as foreigners to this kingdom.”

An order dated 1236 bids the treasurer to have the great chamber at Weston painted with a good green colour, after the manner of a curtain, against the king’s arrival ; and on the gable of the same chamber, near the door, these words to be painted : — “ Ke ne dune kene tine, ne pret ke desir ; ” i. e.

“ He who has and does not give,
Will not, when he wants, receive.”

The following record alludes to a star-chamber, and is the first mention we have of the walls and ceilings being set, as they were, with golden stars upon a ground of green or blue, an imitation of the visible heaven : but space afforded full scope for invention, and it was not confined merely to this resemblance of nature.

“ Liberat. Anno 1238, 22 Henry III. Mandatum est vicē. Southampt. quod cameram apud Winton colorari faciat viridi colore, et stellari auro, in quibus depingatur historiæ veteris et novi testamenti.” The next extract from the *Rotuli*, respecting the palatial decoration, was issued in his twenty-third year, 1239, and implies a part of the history of colouring in oil, the date and discovery of which have by some been determined in John Van Eyck. It runs thus : — “ Rex thesaurio et camerariis suis salutem. Liberate de thesauro nostro Odoni aurifabro et Edwardo filio suo centum et septemdecem solidos et decem denarios pro oleo, vernici, et coloribus emptis, et picturis factis in camerâ reginæ nostræ, apud Westm. ab octavis sanctæ trinitatis anno regni nostri xxiii. usque ad festum sancti Barnabe apostoli eodem anno, scilicet per xv dies.”

“ The king to his treasurer and chamberlains. Pay from our treasury to Odo the goldsmith, and Edward his son, one hundred and seventeen shillings and tenpence, for oil, varnish, and colours bought by them, and for pictures made in the queen’s room,” &c.

Before the time of the brothers Hubert and John Van Eyck, by whom oil-painting may be said to have been restored, the

colours for painting were mixed with a preparation of glue or the white of eggs, which, we are told, was used by Cimabue, in Walpole's *Anecdotes of Painting*; wherein is an account of the process employed in painting on walls, from Sandrart, which I here transcribe: — "When they painted on walls, lest their work should crack, they proceeded in this manner: they glued a linen cloth upon the wall, and covered that with plaster, on which they painted in distemper. This was thus prepared: they dropped into the yolk of an egg the milk that flows from the leaf of a young fig tree; with which, instead of water, gum, or gum-dragant, they mixed their last layer of colours." Walpole adds, "It is probable, from the last words of this passage, that they laid their first colours with water or gum only."

There is here, and elsewhere, sufficient evidence to show that, whilst "Henry, son of John," sat on the throne, painting was pursued with much diligence; but not in one branch alone: the curious, as well as useful, art of illuminating MSS. had been brought to great perfection. This monarch was an exemplary patron of the arts, and kept certain painters about him, among whom William, a monk of Westminster, William of Florence, and William of Colchester were the most eminent; and these, with others under them, he employed to adorn his palaces with historical pictures, illustrative of subjects in the Old and New Testaments, or with particular occurrences in the lives of his predecessors. Thus, the valiant exploits of Richard I. in the third crusade,

"Against whose fury and unmatched force,
The aweless lion could not wage the fight,"

SHAKS.

afforded a favourite theme both to the artist and the poet, and were among the earliest historical pieces which were portrayed by the former. "Claus. 35 Hen. III. Mandatum est Edwardo de Westm. quod depingi facit historiam Antioch. in camerâ regis turris London. sicut ei dicet T. Espernir, et custum quod ad hoc posuerit, rex ei faciet allocari. Teste rege apud Winton. v. die Junii."

"Close Roll. 35 Hen. III. Precept to Edward of Westminster, that he cause to be painted the history of Antioch in the king's chamber in the Tower of London, as T. Espernir shall direct him; and the cost which he shall incur to be allowed by the king," &c. It is said that this history of the Crusade was also painted in a small room in a garden at Westminster, probably a summer or banqueting-house; and that, from Antioch having been the scene in which Richard Cœur de Lion signalled himself in arms, the place was thence called the Antioch Chamber. It was likewise commemorated at the Palace of Clarendon, in Wiltshire, with the single combat of King Richard about fourteen years previous. (*Walpole's Anecdotes.*)

Painting on, or staining, glass is first mentioned in the Close Rolls of the 20th Henry III. 1236. An order, dated 1241, noticed by Stowe, for the repairs of the White Tower (so called from an early practice of whitening externally its walls), states that in the chapel of St. John three glass windows were to be made, representing a little Virgin Mary with her child, the Trinity, and St. John the Evangelist. (*Bayley's History and Antiquities of the Tower of London*, p. 107.) Painted glass is generally considered as having been first connected with architecture in Henry III.'s reign; though Lord Orford, on the authority of Dugdale, refers the first painted glass in England to King John's time; from which statement, Fosbrooke (*Encyclopædia of Antiquities, and Elements of Archæology, Classical and Mediæval*: 2 vols. 4to, London, 1825.) is inclined to differ; and Dallaway remarks, in that work, to which he added many valuable notes, that there was no known introduction of stained glass into England prior to the reign of Henry III.*

Terminating the reign of Henry III., the longest that occurs in the annals of England, save that of George III., we gather, upon a review of the life of Edward I., that, although the prince and the people were alike prone to battle, yet the fine arts were still cherished by some. Painting did not lie dormant; and then it was that Gothic architecture arose in all her stateliness.† It

* Note, p. 38., by Dallaway, in *Anecdotes of Painting*. In the abbey of St. Denis, in France, are some painted windows, which Abbot Suggerius placed there about 1150. Engravings of these are to be found in Le Noir's *Musée des Monastères Français, Histoire de la Peinture sur Verre*, p. 63. The most ancient painted glass now existing in England is in Canterbury Cathedral.

† The following are the materials for the emendation of the pictures in the king's Great Chamber, as the Painted Chamber was then called, from the Roll bearing the same date as the foundation of St. Stephen's Chapel; viz. April 28. 20th Edward I.: — "White lead, at 2d. per lb.; three quarts of oil at 9d.; a measure of green (verdegris), at 1½d.; another of vermilion, at 2½d.; sinople varnish, ochre, plaster, thread, and skin." (*Britton and Brayley's History of the ancient Palace and late Houses of Parliament at Westminster*.)

On the removal of some old tapestry, in 1800, in the Painted Chamber, the paintings on the walls were numerous large figures, and the battles of the Maccabees. They were as old as 1322; as one Symeon, a friar minor, and doctor in theology, in that year wrote an *Itinerary*, now in the library of Bennet College, Cambridge, in which occurs the subjoined passage, quoted by Gray, in a letter to Horace Walpole, in 1768, and first published by Warton in his *History of Poetry*: — "Eidem monasterio quasi immediate conjungitur illud famosissimum palatium regium Anglorum, in quo illa vulgata camera in cujus parietibus sunt omnes historiæ bellicæ totius Bibliæ ineffabiliter depictæ, atque in Gallico completissime et perfectissime constanter conscriptæ in non modica interentium admiratione et maxima regali magnificentia." "Near this monastery stands the most famous royal palace of England, in which is that celebrated chamber, on whose walls all the warlike histories of the whole Bible are painted with inexpressible skill, and explained by a regular and complete series of texts, beautifully written in French, over each battle, to the no small admiration of the beholder, and the increase of royal magnificence."

was the spirit of enthusiasm, and the zeal of enterprise, the daring ingenuity of man, which called forth those mighty creations that excite such wonder within us. But can we assign the cause of that pleasure which we experience in contemplating them? There was a system upon which they acted, but of that we know very little. Of this, however, I am sure, that, as in colouring the parts of their edifices, so in form, proportion, intricacy, and arrangement of ornament, in every thing which made up the grand design, they were guided by principles; they studied effect; they aimed at producing a whole which would work upon the mind of the beholder; their desire was to fix his thoughts, and lead him to feel the force which such works exert upon the sense. Thus, upon the brotherhood, upon a band of men so active and zealous in the cause, were engrafted motives which prompted them to undertakings far beyond our utmost endeavours.

I may refer to the use of one thing not lost sight of, nay, much adopted, by the architects of the middle ages in ornamenting their edifices; and that is allegory, whereby life is given not only to all those arts which are direct imitations of nature, but may be happily applied to architecture, through the medium of sculpture. It is to be regretted that allegory is now so unheeded, since it is the means of conveying ideas, and opens a field for pictorial embellishment, which did not lie uncultivated in former times. King Edward the First's Council Chamber at Westminster was adorned with allegorical representations of the divine Law, and the Gospel, the true Vine, and the Day of Judgment. So are the Cathedral of Rochester, and the Lieb Frauen Kirche at Trèves, the Cloisters of Norwich, the Chapter-House at York, and the Stadt-House at Nimeguen.*

To come to another portion of the far-famed palace at Westminster; the Prince's Chamber, or old Robing Room, exhibited on the jambs of the windows figures which were painted; and round the upper part of the chamber there had been oil-paintings of angels holding crowns. Several capitals were also found which had been richly gilt and painted (blue and red) in oil colours: on two of them were the busts of Edward I. and Eleanor, his queen, carved in Reigate stone, and coloured to resemble life: the hair and crowns were gilt. (*Britton and Brayley*, as above.) To the varnish which protected the surface of the gilding we may attribute its preservation; and, with respect to the colours, the oil with which they were tempered defended them from the access of air, &c.; but their permanency depends

* See Palgrave's *Truths and Fictions of the Middle Ages*. A series of ancient allegorical, historical, and legendary paintings in fresco were, not long since, discovered on the walls of the Chapel of the Holy Cross, at Stratford on Avon. These will shortly be published.

likewise upon the quality of the various animal, vegetable, and fossil substances out of which they are made.

Oil was the vehicle in the painting on the monument of Edmund Crouchback, in Westminster Abbey, as a letter inserted in Carter's *Ancient Sculpture and Painting* clearly proved. It is ascribed to Pietro Cavallini, an Italian painter, and the inventor of mosaic; but this is a question which can be answered only with hesitation: the fact has not, I believe, been truly decided. To this monument we will annex an account from Gough's *Sepulchral Monuments*, which describes in what manner the several parts were painted.* "The canopy of stone over this tomb consists of three trefoil pointed arches, one in the centre, and one lesser on each side of it. Each of these arches is surmounted by a double pediment, separated from the arches by a pilaster, which slopes back in three several stories, and is painted white, checquered with double red lines, in every other square of which is a red cinquefoil (the two uppermost slopes serving as a base to a painted flowered niche), and terminates in a rich purflled finial. The mouldings at the four angles, or weatherings, of the lesser pediment, as well as the two of the greater, are decorated with bunches of oak leaves; and from among those of the centre pediment project four brackets, which originally supported as many angels, whole length, in a standing posture, as expressed in Sandford's print. Each pediment terminates in a bouquet of oak leaves. The ground of the large pediment is painted of a dark blue, sprinkled with golden fleurs-de-lis. The spandrils and interstices have also been painted with plain grounds, or foliage, and the arch-work of the pilasters inlaid with pieces of blue and red stained glass, set in so firm a cement, that it is not easy to dislodge the smallest piece without cracking it. Within the points of the lesser pediments are carved, in high relief, a bunch of oak leaves issuing from a stalk, and a head of an animal surrounded by foliage, bearing some distant resemblance to a modern cherub with six wings. The inside, or ceiling of the canopy, was a sky with stars of gold, on a blue ground, by time changed into a dull red; and within the leaves of the trefoil of the arch were painted the vine tendrils, and elegant foliage, as on Aveline's monument. The inside of the weatherings of all the six pediments is painted and gilt in distemper, with coats of arms in oblong squares; those on the centre or large pediment, which has nineteen on each side, being divided by a red square charged with a six-foil." (Vol. i. pt. 1. p. 70.)

It is reported in the MS. of the *Lives of the Abbots of Glou-*

* See the coloured plates in Stothard's *Monumental Effigies of Great Britain*, in which literary treasure the figures are restored as they were originally painted and decorated.

cester, from Serlo, the first abbot, to the death of Walter Proccester in 1412, that John Wygmore, a person of much cultivated taste, desired that his great dining-room should be painted with portraits of all the English sovereigns who preceded Edward II., by the time a sumptuous feast should be given there, at which he would be present. (*Walpole's Anecdotes of Painting*, with notes by Dallaway, p. 40.) It was customary to hang up in the ancient halls the portraits and arms of distinguished persons, with their names painted on a tablet. The same was observed upon the occasion of grand entertainments, when each knight suspended his shield behind him; a practice which led to the introduction of sculptured works; and, as these were decked with gorgeous colouring, they must have been an internal embellishment which added considerably to the splendour of castle halls and other edifices which contained them.*

In that style of architecture which followed the Early English, called the Enriched English, or the Decorated Gothic, and which flourished to the end of Edward III.'s reign, heraldic ornaments were abundantly used by architects; and at that time it was usual for warriors to dedicate trophies to a propitiatory saint, over whose shrine they were suspended. Subsequently, the bearings of the knights, and the proceedings of jousts or tournaments, were painted in fresco on the walls, or stained on glass, whereon was sometimes seen the shadow of the departed knight, with his hands clasped in prayer, and, as it was then expressed, *revêtu de son blazon*. (*Donaldson on Heraldry, and its Connexion with Gothic Architecture*.)

St. Stephen's Chapel, Westminster, rebuilt by Edward III., surpassed in its construction, and the profuse show of internal decoration, every other in England, and rivalled La Sainte Chapelle at Paris.† The ornamental painting and glazing of this chapel were commenced about 1350, and the works were carried on for several years afterwards. The account of expenses in the Fabric Rolls supply us with very satisfactory information respecting the artists and master-workmen, chiefly our own countrymen, who were employed, and also include some notices connected with the history of oil-painting. Hugh de St. Albans appears to have been the foreman; as he is styled, in the Patent Rolls, "the disposer of the works of the painters, and orderer of the drawings." To the chief artists were intrusted

* Dallaway on *Heraldry*. Distemper painting applied to the emblazoning of arms, either upon wood or stone, was with colours prepared with oil and resinous gums. (p. 37.)

† La Sainte Chapelle, at Paris, was built by St. Louis; begun in 1248, and finished in 1274, from the designs of Pierre de Montreuil, an eminent French architect, in 1275. The interior was so excellently carved and painted, under the inspection of Raoul, the famous goldsmith, that it had, previously to the erection of St. Stephen's Chapel by our Edward III., no rival in point of splendid embellishment. (*Dallaway's Discourses on Architecture*.)

the power of choosing their assistants, and making them serve under the king's wages.

I will now lay before the reader some scraps from ancient memoranda, thinking they tend to throw much light upon the subject in hand.*

"1351. June 18. To John Tynbetre (i. e. the tin-beater), for $\frac{1}{2}$ lb. of teynt, for the painting of the angels, 1s. 8d." After the fire which consumed the Houses of Parliament, almost the only vestige of the once magnificent paintings indicated figures of angels, carrying before them fine tapestry hangings. There are several items of payment to J. Tynbetre for "leaves of tin, to make the pryntes for the painting of the chapel." Another item is for one pair of sheers to cut the leaves of tin. The prints were placed on the marble columns in the chapel; and a writer in the *Gentleman's Magazine* (vol. v. new series, p. 35.) says that, "since the fire of October, 1834, on one of those marble columns he saw one of them which had indeed entirely lost all its colours by the action of the flames; but its substance was still considerable, and raised in high relief upon the marble. It is pretty clear that they were produced by what is now called stencil-work. Perforations were made in the leaves of the tin, according to the parts required to be covered with a certain pattern; and thus a thick coat of paint was worked into the cavity, and left on the surface in high relief, having almost the same effect as modern mouldings in putty, composition, or *papier mâché*, and, at the same time, of a variety of brilliant colours."

"1351. June 20. To John Elham and Gilbert Pakering, painters working on the chapel, as well on the tablements as on the printing of the east end of the king's chapel, six days at 10d. per day, each 10s." On the same (for, as appears from the entries on the Rolls, the windows of St. Stephen's Chapel were painted, whilst the other embellishments were made in the interior of the building), "Master John de Chester, glazier, for working on the drawing of several images for the glass windows of the king's chapel," had the weekly wages of 7s. John Athelard, John Lincoln, Simon Lenne, John Lenton, and Godman de Lenton, five master-glaziers, for working there on similar drawings, the lower wages of 6s. per week.

"June 20. To William Eus, and fourteen other glaziers, working at the chapel, on the cutting and joining of the glass for the windows, &c." Hence, we may suppose that the painted

* See Smith's *Antiquities of Westminster Abbey*, which gives several coloured engravings of specimens of painting and painted glass from St. Stephen's Chapel; exhibiting, as the author states, every colour known in the practice of staining glass. Those of sculpture show with what colours the architectural members were painted.

windows were, for the most part, executed by glaziers. There were some whose business it was to shape, lay, and join the glass after the process of annealing. The tables on which the designs for the painted windows were drawn were whitened and washed with beer; and the glass was cooled with it when vitrified.

“June 26. To John Lightgrave, for 600 leaves of gold for embellishing the tablements of the chapel, at 5s. per 100, 1*l.* 10s.” The quantity of gold leaf used was very great, and of great purity: it was thicker than what is ordinarily obtained. For the gilding, the surface of the stone was first made smooth, to receive some coat of colour with oil, over which the gold leaf was placed, and which was afterwards covered with white, or transparent, varnish.

“July 16. To Edward Paynell, and three others, laying on gold and *pryntes* in the chapel, at 5*d.* per day each, 12s.

“July 24. To the same, and five others, for making *pryntes*, and placing them in the chapel, five days as before, 15s.

“To Master Hugh de St. Albans, for 4 flagons of painter’s oil, 16s.

“To the same, for two flagons of cole, 2*d.**

“To the same, for a pound and a half of oker, 3*d.*; and for half a pound of cynople, for painting the upper chapel, 17s. 3*d.*

“August 13. To John Lightgrave, for 300 leaves of silver, for the painting of a certain window to counterfeit glass, at 8*d.* per 100.

“To the same, for 2 lbs. of vert-de-grece for the same, 1s. 8*d.*

“To the same, for 3 lbs. of vermilion, for the same, 6s.”

Vermilion was one of the most prevalent colours in the architectural members. Vermilion or red lead, with oil, was found by Mr. Haslam, who made a chemical analysis of all the pigments, to be immediately painted on the stone, as a priming.

“August 15. To Lonyn de Bruges, for 6½ lbs. of white varnish, at 9*d.*, 4s. 10½*d.*

“For thirty peacocks’ and swans’ feathers, and squirrels’ tails, for the painters’ pencils, 2½*d.*

“August 27. To Nicholas Chaunser, for fifteen ells of canvass, to cover the images of the kings to be painted, 6s. 8*d.*

“September 3. To George Cosyn, for one quartern of royal paper, to make the painters’ patrons [patterns], 10*d.*

“September 19. For 1 lb. of hog’s hair, for the painters’ pencils, 1s.

“October 3. To John Lightgrave, for 51 lbs. of white lead, for painting the chapel, at 2½*d.* per pound, 10s. 7½*d.*

* Among the prices of colours and materials for the painting at Ely, are “four bushels of scrowes, or shreds of leather, to make size called cole, 18*d.*” (*Stevenson’s Supplement to Bentham’s Ely*, folio, 1817, p 65.)

“October 10. To Thomas de Dadyngton and Robert Yerdele, grinding different colours for painting the glass, five days, at 4½*d.*, 3*s.* 9½*d.*” Silver filings, geet (or jet), and ornament (or orpiment) are enumerated among the articles required for painting on glass.*

Closing the account of St. Stephen's Chapel with these extracts, let us now turn our attention to the painted and stained glass in this century.

Great, sublime, and beautiful was the accession to architecture by the glass of many colours, which intercepted not only the light of heaven, as it pierced through the windows, but cast upon the painted surface of the walls a rich variety of tints, so admirably in unison with the glazed floor and high uplifted roof.

Gothic tracery had, about the reign of Edward III., reached its zenith of excellence; and at this period the architects bestowed much care, as well in designing their windows as in depicting subjects on them. They were divided by mullions, and finished in their heads by segments of circles and rosettes; in which there were elegance of form and graceful flow of outline. In the divisions produced by its ramifications, escutcheons, or coats of arms, were diapered in their proper colours, and mosaics, foliage, and grotesques, on a ruby or other ground. The vertical compartments were generally filled with the figure of a prophet, patriarch, king, or ecclesiastic of the higher orders, shrouded in a niche, beneath a canopy; while a pedestal, or the armorial bearings of each, occupied the space below; the whole being bordered by roses, fleurs-de-lis, oak or vine leaves.†

A singular specimen of design on painted glass at this period, is the window on the north side of the chancel of Dorchester Church, Oxfordshire, which represents the patriarch Jesse lying on his back on the window-sill, with a stem growing out of his body, and spreading itself into five branches on each side. These branches constitute the mullions and tracery of the window, and support in all twenty-five statues, the progeny of the patriarch, which was predicted in chap. xi. of Isaiah, v. 1.:—“And there shall come forth a rod out of the stem of Jesse, and a branch shall grow out of his roots.” This was a favourite

* On the Fabric Rolls of Exeter Cathedral, dated 1318-19, is charged 12*d.* for an iron plate to grind colours on; and in that of 1320-21, considerable quantities of verdigris and vermilion are mentioned. The decorative finishing of the interior of the cathedral, by gilding and painting, was executed under Bishop Lacy. In the Roll of 1437-38, John Budde, “peyntor” of Exeter, is paid 101*s.* for painting fifty-seven nodi (keystones, or bosses,) in the south ambulatory. (*Britton's Exeter Cathedral.*) For some curious documents on the painting of walls and windows, see Dugdale's *Antiquities of Warwickshire*, p. 355, 356.

† Such as these are etched and coloured in Carter's *Ancient Painting and Sculpture*, vol. ii.

subject for glass-painting or tapestry; and Fosbrooke weaves it into his poem, the *Economy of the Monastic Life*, in this couplet: —

“ And windows erst, where, robed, a gorgeous show
Of Jesse’s honour’d race were ranged, a tinted row.”

The exact period when stained glass was first introduced into the houses of kings and nobles is uncertain. Our morning star, Chaucer, in his *Drinc*, v. 312., describes the story of the siege of Troy, as painted on the windows of his own house; and from this we may infer that such embellishments were not confined to ecclesiastical edifices of the fourteenth and fifteenth centuries. But we have an authority which removes all doubt, if any exists, on this point. Le Noir informs us that Charles V. of France, who lived in the time of Chaucer, ornamented not only his chapels, but the apartments in his castles, with stained glass.

In the year 1405, the great east window in York Minster was executed by Thornton of Coventry, which he was to finish in less than three years. For his own work he received 4s. a week; and the glass, which he supplied, cost 1s. a square superficial foot, before it was formed into figures and put up.* In the designs for large windows, and in the disposing of tints, an evident improvement took place, as was the case with a variety of enrichments admitted by our Gothic architects into church architecture in all its ornamental parts. The glaziers furnished the stained glass, which was cut into various shapes, and enclosed with lead, as the colours were required. A pattern sheet, or design, called a “vidimus,” from which the windows were wrought, was prepared by the same artists who painted the walls in fresco. In the founderies, the glass was made of different colours: it was a practice, therefore, with the ancient artists to arrange such pieces in some sort of symmetry, like mosaic-work; and this, which was very simple, gave the first idea of painting on glass. This assemblage of pieces, or panes, was in time dispensed with, and more regular designs attempted. Figures and entire histories were represented, which were drawn upon white glass, and the colours tempered with size, as in distemper painting. As our early artists knew not the principles of *chiaro scuro*, they compensated in some degree for the want of them by drawing the contours of the figures in strong outline, hatching the draperies in black. A bright transparent red was chosen for the flesh-colours, upon which they drew with black the features of the face and other parts of the body. When this kind of painting was much improved, and was used by the Gothic architects

* This window is engraved in Drake’s *Eboracum; or, the History and Antiquities of the City of York*: folio, 1736. The upper part is a piece of elaborate tracery, filled with whole-length figures and portraits; the rest is divided into squares, which take in almost the whole history of the *Bible*.

for adorning churches, basilicas, &c., the colours became incorporated with the glass itself, by exposing them to the fire after they had been laid on. (*Rees's Cyclopædia*: and *Hawkins's History of the Origin and Establishment of Gothic Architecture, with an Inquiry into the Mode of painting upon and staining Glass, as practised in the Ecclesiastical Structures of the Middle Ages*; 8vo, London, 1813.)

All the cathedral, conventual, or larger parish churches of the fifteenth century, had many spacious windows of stained glass, exhibiting figures individually placed, sometimes accompanied by angels, clothed in peacock's feathers, who held the escutcheons. Windows * at Cirencester, in Gloucestershire, show, from being recomposed from the fragments of many others, —

“Shapes that with one broad glare the gazer strike,
Kings, bishops, nuns, apostles, all alike.” T. WARTON.

Stained †, or painted, glass was more generally to be seen in castles and private houses of the nobility, during this century. (*Hist. of Stained Glass in England*; *Gent. Mag.*, vol. lxxxvii. part 1, 1817.)

Of that finished style of pointed architecture, in the time of Henry VII., is the Priory Church at Malvern, which has been designated “another Westminster Abbey.” Henry VII. embellished this church with stained glass windows, of unrivalled execution, and possessing great boldness of design, not inferior to the masterpieces of M. Angelo. ‡ The two circular ends of the church, at the approach to the nave, are partly faced with glazed tiles, covered with writings, and various ornaments common to heraldry. The pavement of the church, which has been despoiled of many of its tesserae, is inlaid with similar tiles; but much conjecture has arisen respecting their origin.

* Coloured in Lyson's *Magna Britannia*, Gloucestershire.

† The ancient method of glass-painting still remains the same; and it is a false notion that the art has ever been lost; under patronage, and with the advance of chemistry, we can achieve even more than the ancients; but the past will blind us to the advantages which we possess in our own times. I may notice a window now executing for Upwell Church, near Wisbeach, by Messrs. Hoadley and Oldfield, which shows that England can boast of artists in this way equal in talent to any in the world. At Huddersfield, Yorkshire, there has recently been put up an east window by Messrs. Ward and Nixon, which bears me out in my assertion as to the fallacy of the opinion so much entertained. In this performance there are some splendid ruby tints, which would vie with those of old.

What is literally called *stained glass* is not so expensive as the public imagine. The pigments made use of by the artist in the present day are nearly all derived from metals; but Mr. Nixon informed me that silver alone stains glass, and by it we may get every shade of colour, from the palest yellow, going on to orange, up to a deep red; and it leaves no visible alteration on the surface, differing, in this particular, from all our other colours.

‡ See Brayley's *Historical Illustrator*, from which the subjoined account is deduced.

The size of these tiles, mostly of a red or brown colour, is about $1\frac{1}{2}$ in. square, and $1\frac{1}{4}$ in. thick. The arms and letters were impressed upon them whilst soft, and the parts that were sunk filled up with differently coloured clays, as orange, &c.; the whole being partially vitrified. But there were other tiles that our forefathers used, which were of a more perishable nature, from having the devices merely painted on the surface, and baked in. On the greater number of the tiles is an inscription in old English characters, which would read as follows, when divested of its quaint and obsolete orthography: — “Think, man! thy life will not endure for ever. What thou dost thyself, of that thou art sure; but that which thou leavest unto thy director’s care, it is but a chance that it will ever avail thee.” (*Brayley*, as above, p. 181.)

The conventual and the parochial churches were supplied with tiles from the greater abbeys, that were provided with kilns, for the purpose of preparing them after the manner of porcelain; and the monks, who manifested so much ingenuity in these things, having acquired a knowledge of this branch of encaustic painting, amused their leisure time by designing and finishing them. (*Dallaway’s Inquiries into the Origin and Progress of the Science of Heraldry in England*. 4to. Gloucester, 1793.)

Often was the great expense at which the regular clergy adorned the sumptuous architecture of their monasteries made the theme of scorn and satire by the poets of these times; assisted as they were in their productions by the usages which then prevailed: and there was no object for which the Dominicans, in particular, so eagerly solicited money as for stained glass for their chapels.

Towards the close of the fifteenth century, as *Dallaway* acquaints us, *John Fane*, a wealthy merchant of London, embarked in a Spanish vessel, bound from a Flemish port for South America, laden with stained glass; and made known his liking to the storied windows, by building a church in the Gothic style for its reception. (*Anecdotes of the Arts*.) Thus, in those days were sown the seeds of perverted religion. Gaudy and mystical pictures pampered the pride of the people, and misled the ignorant poor. But can we wonder that the founders of churches evinced their partiality for those blazoned windows, which teemed with such beautiful imagery? for, at mid-day, when the sun’s rays poured forth their flood of dazzling light; or at night, when the moon shed her beams across the chancel, illumined by large waxen lights placed about the altar; the effect must have been truly captivating and sublime.

March, 1838.

ART. III. *Notes on modern Architecture.* By AMICUS.

No. 4.

MUCH display is frequently seen in street architecture, but it is not always governed by good taste. In Store Street, Bedford Square, there is a row of unpretending houses, which, for simplicity and harmony, deserve to be noticed, although they cannot boast of any great stretch of imagination or originality. The ground stories are occupied by shops, which have a continued cornice, unbroken, and supporting the balconies of the one-pair floors; thus forming a line of connexion which gives an agreeable unity to the design. The shops project some little distance from the wall of the houses; and the balconies, forming part of the projection, give the appearance of an additional decoration, rather than a necessary adjunct to them; and, as the shop fronts are of a less substantial material, the idea of weakness is not so apparent as when they are placed within the walls of each house; and, had the occupants been content that the same colour should be carried through the whole building, more particularly in this story, the harmony would have been nearly complete. More substantial pilasters would have added to the consequence, as well as the consistency, of the design. Thus much for the shop fronts, which are always difficult things to manage. The houses are decorated, on the one pair, with architraved windows, having segmental pediments over them; the second and third floor windows have also architraves; between these floors is a modillioned cornice, just sufficiently rich to produce a somewhat sparkling effect of light and shade, and not too rich for this description of houses. The windows are coupled; but, as the vertical channel, slightly sunk at the party walls, marks distinctly the separation of the houses, I do not so much object to this arrangement, as necessity, in a great measure, may be the cause of it. Three windows would have crowded the exterior, and one would not have been sufficient, without making it too wide for the interior, and thereby injuring the effect of the exterior simplicity of the design. One, or three, windows is best, in point of design, for the interior of a room; as the centre is then defined, and the eye is not disturbed by the division of light. I hold it a material part of composition, that prominent effects should not be divided. A centre window produces a body of light forming a main and leading feature; and it gradually becomes less important as it recedes to the farthest parts of the room. Three windows produce the same effect; but two divide the light, and a shadow is thrown by the central pier where light is required. In these houses, as my intention is merely to speak of external effect, this objection is pointed out in this place only as a general hint.

The vertical channel marking the boundary of each house leaves nothing for deception: the imagination will never recognise one building by this row; they are what they appear to be, distinct and separate; yet they are united in point of composition, and produce, collectively, harmony of design, and, individually, fitness and propriety, equally satisfactory to the mind. The segmental pediments over the windows may be objected to by some; but I do not myself see so much objection to this form as even that of the two inclined planes, which always conveys the idea of the end of a roof. I look upon pediments over windows, generally, as an additional ornament, serving to give consequence as well as shelter; but, as they abut against the wall, the segment is, perhaps, as little objectionable as the angular one, and it conveys less idea of the termination of a roof. Horizontal cornices are decidedly the most correct in this situation; but I may be called over-fastidious, if I say other forms should be totally rejected. Although there is little in these houses that can be said to be removed from the every-day style, they present a far better study for reasonable architecture than all the affected “crankums” of would-be originality, which mark many of the productions of our streets. In these houses, the necessary wants of the occupants appear to have been studied; the shops, to display their articles of trade advantageously; and the windows of the upper stories, to admit sufficient light for the comforts of private life. These are the mere necessary requisites: holes in the wall are absolutely enough for this purpose; but, in a country of high civilisation, something more is sought for. The necessary vanity created by our station in society must needs be satisfied, and this is to be done only by outward show, which, when governed by reason, assumes a high mental character. Now, as architecture first supplies our wants, then our wishes, and ultimately satisfies our minds, let us take these standards for our precedents, and note some of the buildings we are constantly seeing.

First, let us once more refer to the houses in Store Street; the continued line of the ground floor, and balconies over; the similarity of the windows of the first floor, marking a less degree of decoration than the shops, where all importance is centred; the rows of equal-sized windows in the two-pair and three-pair floors, each assuming its proper degree of ornament; the enriched cornice, which apparently marks the place of a floor, or tie to strengthen and give solidity to the design, and, from its consequence and situation, properly enriched; and the upper cornice simple and unimportant: these, together, form a reasonable design, equally satisfactory to our physical and mental senses. It has been said that these simple rules, if strictly adhered to, would be the means of limiting our designs, and

fettering genius, which should not be restrained in its flights of imagination; it would also strip architecture of its entire decorations; the Doric triglyph, the Ionic dentil, and Corinthian modillion, with their different grades of enrichments, would be banished at one fell swoop. Not so; for, whatever style of architecture we may wish to imitate, its characteristics may be carried out perfectly in accordance with these rules. If we only commence, in designing a building, by divesting ourselves as much as possible of all the known architectural forms we have been so constantly imitating, to the exclusion of all original art, decoration suited to the subject will necessarily arise out of the bare materials. The uses of the building, the station of the occupants, and the materials of construction, are alone sufficient to form our design upon; and it is quite impossible to conceive to how great an extent of dignity, grandeur, and ornament this might lead.

The houses now erecting opposite the Victoria Gate, Hyde Park, except the centre, form a very good general design, in what I may call the imitative style of architecture; but an attempt to give a higher degree of decoration to the "hole in the wall" of the centre houses completely disunites the design. The simplicity of the architraved windows, in an uninterrupted line, is more agreeable and satisfactory, from their appropriate decoration, as well as their necessary form and situation, than the highly decorated windows of the centre compartments. A row of houses of such extent as this row is to be, and where the object is to produce uniformity of design in one great mass, unless some degree of variation be introduced, in form or detail, frequently becomes monotonous: but the great difficulty is to produce that variety, and, at the same time, to preserve the unity of the composition. The centre may be considered the point from which every thing should emanate, and to which every thing should tend and be linked: a decided alteration of forms will always be fatal to the composition, and, I think, these houses illustrate the fact. The cornices are the only connecting lines in the building; the windows of the centre are totally opposite, in design, to those of the sides: this is enough of itself to destroy the unity which it was intended to convey. But the windows of the centre assume a decoration which appears to have no connexion with any other feature in the buildings. I presume the style of architecture which it was intended to imitate is Palladian. With regard to the sides, the imitation can scarcely be complained of; but the three-quarter columns, with pedestals, entablature, and, I believe, pediments over them, merely forming a decoration to the windows, are completely out of place. This arrangement is applied to the ground and one-pair floors, with only the variation of the order

of architecture. The lines of the entablature are not continued on the face of the wall (which, had this been the case, would have improved them in some degree), but abruptly return against it; and, to add to these incongruities, the entablatures are broken into three parts, and the one in the centre into five parts. The effect of this great mass of centre buildings is now completely destroyed. Here might have been shown some bold and vigorous imagination, that would have combined with the sides, and produced a design worthy of the size of the houses, and the situation in which they are placed. By the introduction of the orders on such an insignificant scale, the windows actually appear of shorter proportions than those of the sides, in consequence of their being encumbered by their dressings. In every respect, in this part of the buildings, the orders are injudiciously applied; for we generally consider the style of architecture completely marked by the order employed. For instance, Whitehall Chapel is in the Italian style, with two orders, Ionic and Composite: these are proper characteristics of the decoration of this building, as the whole of each story is occupied by its order, and the plinths and cornices are presumed to mark the different floors, and to form the connecting ties and bearers; but this is not the case in the buildings at Bayswater. Here the style may be called Italian; but the orders are placed in such situations, that they cannot mark the distinction between floors, nor can they convey to us the idea of strengthening ties by the entablatures, or of efficient supports by the columns. I have, in a former paper, observed that columns should stand out from the wall, and in such situations as would give to them importance; and, as we always associate them in our minds as the main props of a building, when they depend upon that building for support, their utility is violated, their dignity humbled, and they can no longer be considered as essential supports to the fabric.

The Royal Institution, in Albemarle Street, presents a formidable appearance in street architecture, for it must come under that title. I know many persons have called it a strictly classical design, and say it is perfectly beautiful; but these opinions arise from the want of a strict reasoning knowledge of architecture. What I have endeavoured to point out, as some of the leading rules of composition, are very easily attained by non-professional persons, and, with little observation, would serve as a basis upon which to found their criticism.

When you do not see the windows; when you are unacquainted with the fact that the columns are little more than halves; in short, when you are in such a situation in the street as to get a distant view of the columns alone, gradually diminishing in perspective, you are rather struck with the richness of

the building; but every step you approach towards it, by as many steps it recedes in your estimation: you are first certain that the columns are not what they appeared to be; they do not stand alone; the deeply recessed portico vanishes from your mind; and the magnificent portal, which you had instinctively conjured up as the mighty entrance to this gorgeous fabric, is for ever erased. However you might feel inclined to treasure in your mind the unbidden vision, you are soon forced to descend to facts, stubborn facts: no less than three floors are crowded within the space of one; or what ought to appear one, for there is no line between them, and no connexion of string course, that in the least indicates the fact that the three are distinct floors; the little windows are squeezed up within their confined spaces, like mere peep-holes; and the doors (for there are three of these openings, to bring our lofty visions to realities) are small and mean, and without the least decoration to distinguish them from the windows. Had the building been only decorated in the windows and doors, without any ostentation of Corinthian columns, a substantial design might have been produced: even enrichments might have been carried to a great extent; and the very difficulties which the subject presented, by a little stretch of imagination, might have been the means of triumphant success. But, alas, for architecture! Is she never to shake off her trammels? Would we had never known the great works of antiquity, if our knowledge is only to be used in their misapplication!

As soon as an opportunity occurs for the erection of a magnificent building, the memory of the architect is strained for precedent. Visions of all the gorgeous palaces of ancient Rome, and the simple grandeur of the Athenian Acropolis, flit before his eyes; temples on temples crowd on his imagination, and he flies to the traveller's stores. Greece and Rome are at once reproduced upon his paper; and, surveying his work with gratification, he points out to his admiring friends the temples and columns he has scrupulously copied in his design! A few high-sounding names, judiciously applied, complete his success, and his hearers lift up their hands in amazement, and cry, "Beautiful!" "Classical!" "Wonderful genius!" &c.

London, March, 1838.

ART. IV. *Candidus's Note-Book.*

Fasciculus XI.

"Sicut meus est mos,
Nescio quid meditans nugarum; et totus in illis."

I. BLANK panels are no better than gratuitous solecisms in architecture; inasmuch as, while they are introduced for the nonce,

and without the slightest plea of utility, they are worse than unmeaning, because they only point out what is omitted. No one, as far as I know, ever yet took it into his head to decorate an apartment by hanging up empty picture-frames in it; yet the absurdity in the one case would be no greater than in the other: for what is a panel sunk in the face of a wall, except a frame for a subject in relief, or sculptured ornament of some sort. Nay, more frequently than not, so far from contributing in any degree to embellishment, they give an air of penury and poverty to a building, being left quite bare in themselves, without mouldings of any kind to serve as a finishing. Nevertheless, we must suppose some architects have considered them highly tasteful and ornamental, from their making such frequent use of them: besides which, it must be confessed that they have the recommendation of being wonderously cheap; for, while they cost nothing to execute, neither do they put the architect to the expense of a single idea.

II. I have just been looking over, for the first time, Dubut's *Architecture Civile* (Paris, 1803), in which I have been greatly disappointed, even in the execution of its outline plates, they being, with the exception of the frontispiece, which is nearly the only good thing in the work, very tame and spiritless. In regard to the designs themselves, they exhibit a most wearisome monotony, whether taken collectively or individually, and much extravagance in their general idea, attended with no less frigidity in the working it out; affected pomposity without any approach to richness, and no variety in detail. In fact, there is hardly an idea to be derived from them all put together; although it would seem that the main use of such collections of mere designs is, to suggest hints that may afterwards be turned to account. In regard to internal decoration, which one would imagine to be not the least important part in domestic architecture, the work is an absolute blank; for, although there are sections, they are allowed to exhibit no more than bare walls, and mere openings for doors, without even the most ordinary architectural finish. The only novel and really good idea in the book is that of showing in one plate the relative sizes of all the plans, drawn to the same scale. This deserves to be adopted in similar publications, and would be particularly interesting and useful, besides serving, in some measure, as a table of contents, in Stuart's *Athens*, Desgodetz's *Rome*, for instance; one plate being made to contain all the plans, a second all the façades of the buildings illustrated in the other engravings.

III. It is somewhat tantalising on the part of Woods, that he has not given any sketch of what would, I dare say, have been quite a novelty to most of his readers, infinitely more so than the subjects of many of his cuts, and an exceedingly welcome one

also, unless he has greatly overrated the thing itself in his account of it. Speaking of the Palazzo Mattei at Rome, he tells us that in the lower court are some valuable fragments of architectural ornaments, built up in the walls; "and, in particular, two semicircular windows, where the rich foliage, which occupies a part of the opening, shows that the ancients knew how to produce an effect somewhat similar to that of the tracery in our Gothic windows, and in some respects superior to it, without at all departing from the character of their own architecture." So, then, it seems there is a genuine classical novelty in store, which no one, not even Woods himself, has yet served up to us upon paper.

IV. Greatly is it to be hoped that, whatever may be erected in the centre of Trafalgar Square, it will not be another huge column. There is already one thing too many of the kind in the metropolis; a single specimen of what excludes all variety or design being quite sufficient to satisfy the most voracious curiosity. What reason can be argued in favour of having a column on that site, I know not: certainly, there are several reasons against it, independently of the one included in the above remark. In the first place, there is the York Column just by; in the second, a lofty column would hardly serve as a foil either to the National Gallery, or any of the other buildings; in the third, it would itself suffer by comparison with the steeple of St. Martin's Church, which is nearly 200 ft. high. Let it be the proposed monument to Nelson, or anything else, which is to embellish that site, I should say it ought to be designed with reference to the existing buildings, so as to set them off to as much advantage as possible, instead of in any degree overpowering them. If it must, at all events, be a column, at least let it not be such a one as belongs to an entablature, but something of a rostral pillar, a professedly ornamental, and certainly most picturesque, object. Then, if a statue of Nelson is to be placed on the summit, those of other naval commanders might very suitably be put on the prows jutting out from the shaft; so as to be attached to the shaft itself. In addition to these, there might be zones of bas-relief cincturing the shaft at intervals, while other sculpture might be introduced in the lower part of the design—namely, that which would constitute the base, or platform, supporting the pillar itself.

V. Welby Pugin has just broken out afresh into a strain of invective more furious than ever. His delectable lecture at St. Mary's College, Oscott, where it seems he has been appointed Professor of Ecclesiastical Antiquities, teems with indiscriminate abuse of the whole profession. According to him (for he does not qualify his censure by any kind of exception), the architects of the present day are, one and all, little better than quacks and

empirics, dabbling in all styles, and understanding none. Of course, Welby considers that he is as infallible as the pope himself; nevertheless, every one is not bound to abide by his opinion, particularly as he demands implicit faith in it, taking no trouble to bring forward either argument or criticism in support of it; though his opinion itself amounts to a declaration that we are all completely in the wrong, and, therefore, need most prodigiously to be set right. Nevertheless, Welby Pugin may, perhaps, show his good sense in abstaining from criticism, being doubtless aware that indiscriminate abuse is one thing, and criticism quite another.

VI. However they may differ in other respects, all books on perspective agree in one, which in itself is the reverse of commendable; namely, in giving for the exemplification of the rules the most tasteless objects. No doubt, the simpler the examples are, the better; yet it does not therefore follow that there is any occasion for their being absolutely uncouth and ugly, not to say perfectly hideous, as is very frequently the case. On the contrary, it seems desirable that (although such is not the express and main purpose), whilst learning perspective, the student ought also to acquire a feeling for elegance of form and design; whereas now, supposing him to have any taste at all, he is likely to be disgusted with the study itself, merely in consequence of the deformities it is rendered the vehicle of. If not for the sake of the learner, an author ought, for his own credit's sake, to show that, besides being acquainted with perspective, he is also an *elegans formarum spectator*. The same number of lines that are requisite for describing a clumsy kitchen table would suffice to express a piece of furniture of classical design. *Cæteris paribus*, likewise, it takes no more time nor trouble to delineate a pleasing well-proportioned building, than it does one that is absolutely frightful. Nevertheless, it seems almost to be considered a maxim, that the ugliness of the subject tends to set off the perspective, and give it an additional value. It is not, indeed, to be expected that every teacher of perspective should be also an accomplished designer; yet, although he may not be able to invent good illustrations, he can surely select agreeable examples for his purpose from among buildings, &c., that really exist, or else from drawings.

VII. It is hardly worth while to say anything further relative to Parsey's doctrine, or to notice what has been alleged against me by Q., and another correspondent, at page 191., further than to observe that they are exceedingly precise matter-of-fact gentlemen, and somewhat slow of comprehension. No one, I conceived, could misapprehend me when I took the liberty of recommending the Tower of Babel as a very suitable subject for Mr. Parsey; yet Q. very gravely sets me right, by explaining what I am just as well aware of as himself, as he might have

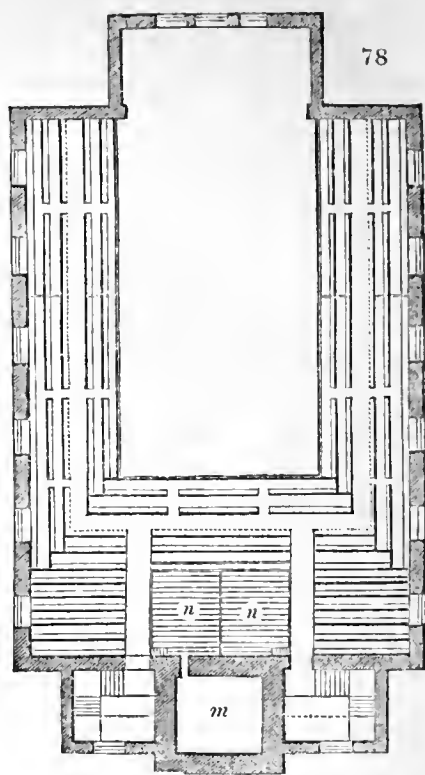
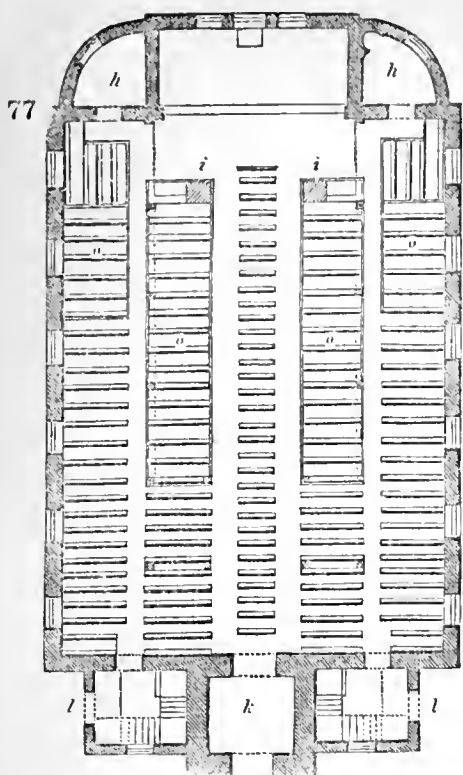
conjectured from what I then said. He further questions the correctness of my remark relative to the cut of the Glyptotheca: nevertheless, I must still contend that the mode of representation there adopted is graphically erroneous, although the perspective may be correct according to the point of sight assumed; for the plain reason, that it shows the building as it cannot be seen in reality, and shows it, besides, greatly to disadvantage; therefore amounts to taking a licence for the perverse purpose of making the object appear very inferior to what it really is; which may very fairly be called a species of falsification, and is erroneous in practice, although a drawing so executed may be correct in itself. My meaning, I flattered myself, was sufficiently obvious; yet I now find that I was mistaken, and that there are people who think it ingenious to show their want of *nous*. I may take this opportunity of remarking that, besides being otherwise highly objectionable, the placing the point of sight nearly midway between the bottom and top of a building occasions a most disagreeable and anti-picturesque formality, because the lines below will have nearly the same degree of inclination upwards as those above have downwards, which, where unavoidable, as in the case of the interior of a room just double the height of the eye, is awkward enough; and, when the same effect is produced purposely, quite contrary to the truth of the subject, it becomes positively offensive, I might say intolerable.

ART. V. *Design for a Church.* By EDWARD BRIGDEN, Architect, Bristol.

THE object principally held in view in this design is the attainment of the greatest accommodation for a congregation (in point of numbers), with as small an expenditure as the nature of the case allows.

It is adapted for the neighbourhood of a manufacturing district. The majority of the sittings being free; and as, of course, economy in such cases is an object of importance, the style is plain and simple, partaking somewhat of the Italian character. This edifice may be constructed either of brick or stone; and, if the stone were of that quality that its outward appearance might not be pleasing, the walls could be stuccoed.





This method, if common wall-work in random or rubble stone were introduced, would be the cheapest.

The arrangement will be seen by the plans of the ground and gallery floors.

Fig. 77. is the ground plan, in which *h h* are vestries, &c.; *i i*, the pulpit and reading-desk; *k*, entrance under tower; *l l*, the staircases to the gallery. The body of the church is 85 ft. by 60 ft., and it is principally fitted up with free sittings. The pews (*o o*) are marked with a black line.

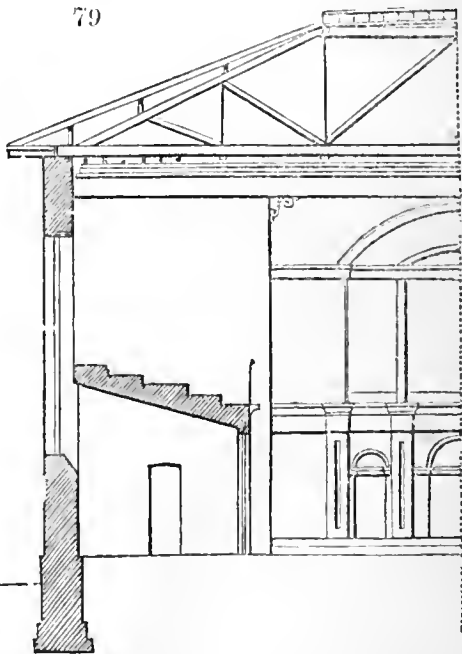
Fig. 78. is the gallery plan. In this, *m* is the belfry, and *n n* the children's seats.

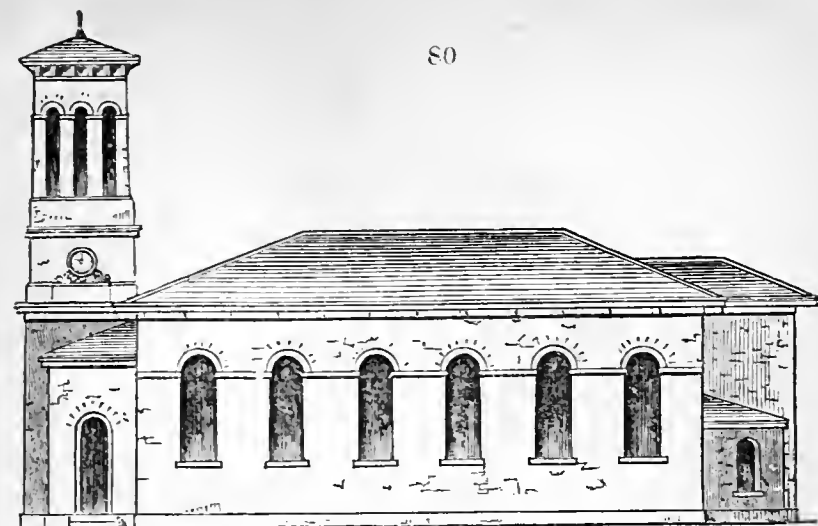
Fig. 76. shows the west elevation, and *fig. 80.* the south elevation.

Fig. 79. is half the transverse section, showing the seats for the children, and the construction of the roof.

Fig. 81. is the elevation of the gallery front, in which the system of arches adopted in the general features of the design is kept up. This sweep should be formed of deal, which should

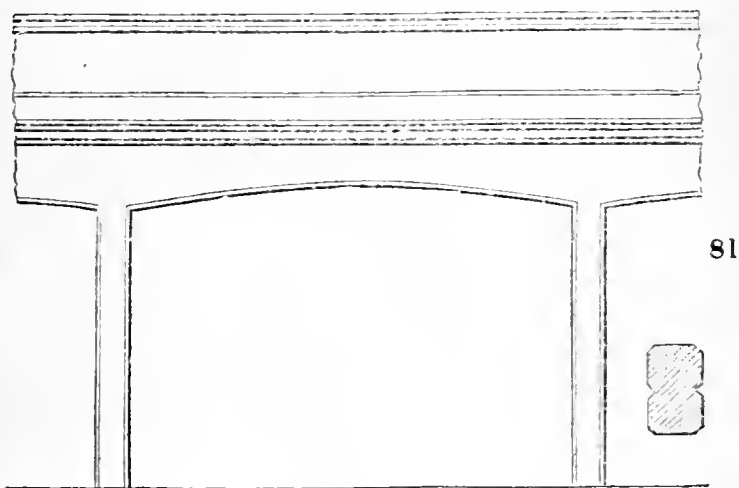
79





case the real support, or beam, inside. This beam is to be supported on iron pillars, also cased to the form shown in *fig. 79.*, and grooved, to give them an appearance of lightness.

All the figures are drawn to a scale of $\cdot 14$ of an inch to 10 ft.



This church will contain, on the ground floor, 310 pews and 520 free seats; on the gallery floor, 672 free seats, and 120 children's seats; making in all 1622 sittings.

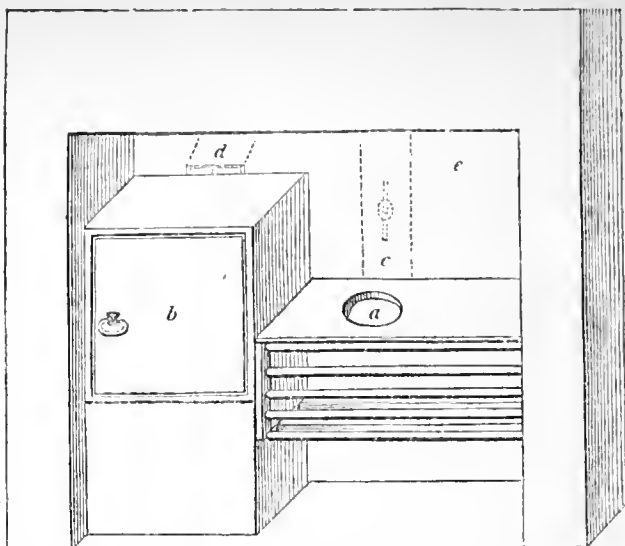
The expense of building such an edifice, of course, depends upon its locality; but it may be stated, on an average, at from 5000*l.* to 6000*l.*; though, in some situations, it might cost a little more.

Bristol, July, 1836.

ART. VI. *Notice of an Improvement to a Cottage Fireplace.*
By M. SAUL.

I HERE send you a plan of a cottage fireplace, which is found to have several great advantages over the old plan.

82



From inspection of the drawing (*fig. 82.*), I presume it will be understood that on the grate is fixed a cast-iron plate with a circular aperture in the centre at *a*. It is $8\frac{1}{2}$ in. in diameter, which just takes a common tea-kettle, and answers well for other-sized pans, as I find it is of no moment, the pan being larger than the aperture. By this plan the heat is confined in the grate; and, by several experiments, I have proved that anything will much sooner boil in this closed grate than in an open one; and it also throws out a greater heat in the room, and prevents smoke; and, when the fire is not wanted for cooking, there is a plate to cover the aperture. It also consumes less fuel, and is a sure remedy for a smoky chimney. When an oven is also made in the same fireplace, as seen at *b*, the whole heat is made to pass upon the oven by turning the damper in the flue *c*, which is behind the iron plate; when the smoke is carried up the oven flue (*d*). When the oven is not wanted, the flue *d* is closed with the damper, and then the smoke rises through the flue *c*. A small aperture is made on the top of the iron plate at *e*, to admit any smoke that may arise when putting on the fuel, or changing the kettles or pans.

This plan may be adopted to any grate now in use. It is only necessary to get a cast-iron plate the size of the grate. It is to rest upon the top bar of the grate, and on the brickwork on the back; and a small aperture is to be made for the smoke to escape, and an iron plate fixed in front, to prevent the smoke from entering the room.

This closed grate I first adopted in my garden tower, which I have lately built on the north road, about one mile from Lancaster; so that, when I and my friends go to spend an hour or two there, I can in a few minutes have it well heated, and hot water prepared either for tea, coffee, or punch.

Sulyard Street, Lancaster, Dec. 1837.

MISCELLANEOUS INTELLIGENCE.

ART. I. *Domestic Notices.*

ENGLAND.

A JET D'EAU upwards of 80 ft. high.—“On March 9. 1838, the inhabitants in the vicinity of the Elephant and Castle, Newington Butts, and the numerous passers by at those busy and crowded thoroughfares, were astonished by the singular spectacle of a column of water suddenly bursting forth at the corner of the New Kent Road, and rising to the surprising height of upwards of 80 ft. For about twenty minutes, this magnificent *jet d'eau* maintained an altitude of upwards of 60 or 70 feet. The cause is said to have arisen from the following circumstance:—A turncock in the employ of the Vauxhall Water-Works Company had been in the habit of leaving the keys, or turning implements, used for the main pipe, at a butcher's shop in the Kent Road. A plumber in the neighbourhood procured the keys, and turned off the main at a time when the Company's works, assisted by a new forty-five-horse power steam-engine, were in full action, forcing the water to Dockhead, Rotherhithe, and the utmost limits of their extensive ramifications in that direction. Such was the resistance ere the catastrophe, that the action of the steam-engine was impeded full two minutes; until, being taxed to its utmost power, a ferrule on the main pipe was forced out, thereby preventing the engine's destruction, and consequent demolition of the Company's Works, with a loss of life and property that might have occurred to a frightful and incalculable extent. The consequence, however, was, that the whole body of water so forced, exceeding five tons per minute, fell on the Rockingham Arms, and the roofs of Messrs. Williams and Sons' extensive premises adjoining thereto, which latter were for the time completely submerged, and their valuable stock of mercery and drapery greatly damaged, and partially destroyed; the deluge, in its progress, carrying with it the ceilings throughout their buildings.” (*Morning Chronicle*, March 16. 1838.) The force of this jet reminds us of our idea of forming grand jets in the centre of some of the principal public squares, as well as in the canal in St. James's Park. The water might be made to rise in a hollow column, which would have as good an effect as if it were one solid mass of fluid. The idea readily suggests itself from observing the wick and flame of an Argand lamp. There would be very little waste of water in this description of fountain; because the same quantity would be continually sent up as it fell down. Hence, if the idea should occur, on great occasions, of colouring the water in imitation of wine, or of scenting it with essence of roses or of oil, or with any other essence that would diffuse an agreeable odour in the atmosphere, it might be carried into effect with great ease, and at very little expense.—*Cond.*

The Art Union.—The Society for the Promotion of the Fine Arts, established under this name at the commencement of last year, is making rapid advances in public estimation, and will consequently be able to extend its sphere of usefulness. We have already laid before our readers the mode pursued by the Society (Vol. IV. p. 262.). Every annual subscriber of one guinea is a member; the whole amount of money thus subscribed is apportioned by the committee into various sums, to be expended in the purchase of pictures; and every member, for each guinea subscribed, has the chance of obtaining the right of selecting a picture from one of the public exhibitions, to be retained by himself, but paid for by the Society. During the last year, although operations were not commenced until late in the season, the sum of 489*l.* was collected, and thirteen pictures, varying in price from 10*l.* to 100*l.*, were chosen by the holders of the respective prizes. In addition to the chance of obtaining a picture of value, and the *certainty* of aiding in the encouragement of art, which each subscriber of last year possessed, the committee have pledged themselves, in their advertisements for the present season, to

cause one of the pictures purchased by the Society to be engraved, and of this each subscriber will receive a copy.—*G. London, March, 1838.*

Asphaltic Cement.—No fewer than five different companies are advertising asphaltic cement. One is called the English Asphalt Company; another, that of London, Paris, and Hamburg; a third, Claridge's Patent Asphaltic Company, managed by a French gentleman; a fourth, the British Asphaltum and Patent Coal Company, and so on. This last company states that it has "been discovered, after various satisfactory experiments, that asphaltum of a superior description can be produced in England at a much less rate than that imported from the Continent." "It has also been ascertained that, by a combination of a bituminous material, likewise plentiful in Great Britain, an efficient substitute for coal can be produced, at less than half the present price." Some good, we trust, will ultimately result to the public from so much competition; but, in the mean time, as all these different asphalts are not likely to prove equally good, many persons who make trial of the article will probably be sufferers. We understand the British asphalt has been laid down in the front garden of the Marquess of Salisbury's house, facing the Green Park. The smell is said to be very powerful and disagreeable; but that will, of course, be dissipated by time and the weather.—*Cond.*

Howel's Double-action Door Hinges are at present exciting the attention of carpenters and builders. They are particularly adapted for folding and swing doors, as they admit of the door opening either way, and being folded flat back against the wall. As far as we are able to judge, this new hinge deserves the patronage of the public.—*Cond.*

SCOTLAND.

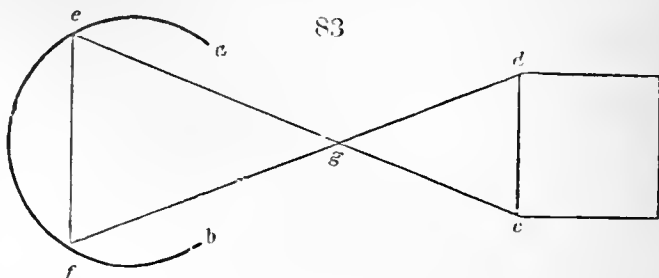
The Duke of York's Monument in Edinburgh.—A bronze pedestal for the statue of His late Royal Highness the Duke of York arrived at the Castle yesterday afternoon, from London. It had come to Leith by sea, and was conveyed from that port to the Castle upon a cart, drawn by three horses. The statue is to be erected within the precincts of the Castle, and not, as some have supposed, in some of the streets of the New Town. The pedestal is about 8 ft. in height, and the statue 10 ft., making in all about 18 ft. when erected. (*Scotsman.*)

ART. II. *Retrospective Criticism.*

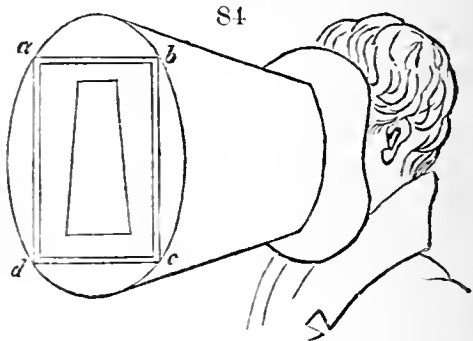
PARSEY'S Natural Convergence of Perpendiculars. (p. 92.)—Many persons are guided by the opinions of others; and, as the observations of Mr. Pocock, jun., and Kata Plusin, unhesitatingly announce the impracticability of my system, they are calculated to arrest enquiry and do me an injury. Permit me briefly to answer their leading arguments, which never would have appeared in print, had I been heard on all I have to say, as Mr. Pocock remarks, in "fair discussion." I have only delivered two lectures at any of our London institutions, and justice cannot be done to this valuable subject in less than six. First, then, Mr. Pocock admits and demonstrates convergence and foreshortening of perpendiculars, as well as Kata Plusin, which unquestionably falsifies the old system; and yet he congratulates himself by saying, "fortunately for us, then, Mr. Parsey's theory is not correct." This he attempts to show by the curves on the retina, and the misplacing of pictures; the latter being a distinct question, and an after action to the production of a picture. Mr. Pocock may recollect that in my lectures I demonstrated that parallel ordinates project themselves of equal lengths when the eye is opposite to the centre line, and that their representation is decided by the subtenses, and not by the angles in the eye. As the supposed curvature of right lines shown by Mr. Pocock's diagrams, No. 31. and 34., p. 93., leads to many doubts, supposing the retina to be the seat of vision (which it is known I question), let *ab*, fig. 83., represent that concave surface; *cd*, the side of a cube; *cf*, the arc formed in it; then each side will produce a similar plane sector of a circle; although the surface of the retina must hold curves, the

rays must form pyramidal plane triangles, the base at right angles to the axis, and, consequently, the image seen a square. The receptive surface being spherical, the right-lined base of all images must be at right angles to the axis of vision; and all lines produced from right-lined objects will appear so, on the principle of a section of a sphere appearing a right line in its own plane.

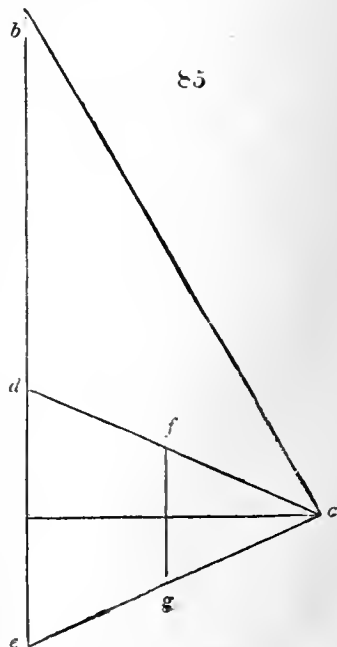
When an object is curved; that is, if $d c$ be a curve, $e f$ will be a complex curve, the plane sector becoming a curved sector; the base or image being then similar to those shown by Mr. Pocock in his figs. 31. and 34., p. 93. Thus,



it may be seen I do not deviate from mathematical principles, and my principles of vision are not falsified or rendered impracticable. Mr. Pocock's next argument is, that pictures, as well as natural objects, will put themselves into perspective: the first put themselves into perspective on the principles of solids, the latter on those of surfaces. But remark, it would be ridiculous to put a picture into any oblique position to view it; and any distortion of the image it is intended to represent, by placing it improperly or unnaturally, is a fault in the judgment. I cannot see it would be any misfortune to art or science for my theory to be correct. Mr. Pocock, in fact, admits my theory, but questions its practicability. I am prepared to submit to any one who holds such opinion specimens of the effects of the natural system with those of the old system, which never fail to produce a decision in my favour. If every one would enter upon the question as fairly and candidly as Mr. Pocock expresses himself, subjects of importance might be settled agreeably to all parties, and to the benefit of art and science.



Now, with respect to Kata Phusin's remark, that "it appears that perpendiculars do not, in general, appear to converge, because they are always at right angles to the direction in which the spectator is looking; and they never can be represented as converging, because no picture may subtend a greater angle than 60° either in breadth or height;" let me say perpendiculars are only at right angles to the spectator when the eye is midway between their extremes, any more than horizontals are. But to answer all his objections to the representation of this unavoidable natural effect, let a spectrometer be made as in the diagram, fig. 84. Let a conic front, expanding 60° , be constructed with a square frame ($a b c d$), attached to the base of the cone. On elevating or depressing the head, the frame or plane of the picture will always contain the objects to be represented, and what is really seen; the frame will always be truly perpendicular to the vision. Compare then the perpendiculars to the horizon with the visual perpendiculars, and trifling as well as consider-



able convergence will manifest itself to the eye; which comparative method brings the judgment to a conclusion on effect as well as principle.

I will only add that Kata Phusin errs in saying convergence is trifling, and only begins at a distance of 40 yards on viewing an object 200 ft. high. Let $a b$, fig. 85. be 200 ft.; $a c$, 40 yards, or 120 ft., with the eye at c : then, if the object be of the breadth $d e$ throughout, it will appear $d e$ at the bottom, and $f g$ at the top, being little more than half its actual width. Thus, it may be seen that convergence is more considerable than is anticipated; but, as probably no one has been able to satisfy themselves so fully on all the minutiae of the science of vision as I have, I can feel no surprise at meeting with suggestions from others which have imposed themselves on me in the course of my investigation of the subject; and every one will find me willing to meet any objections or opinions in fair and courteous discussion.—*Arthur Parsey*. 91. Regent Street, Jan. 2. 1838.

Mr. Lamb's brief Hints for the Preservation of the Architectural Remains of the Middle Ages. (p. 159.)—It is laudable to treasure up those works of by-gone days which are striking memorials of the industry and ability of a people, for they tell us their history, and the state of learning to which they had arrived, often with far greater truth than written records. It is well to regret the decay of those noble buildings which were raised by our forefathers for the celebration of Christian worship; they afford such abundant materials to the student in producing a design; but without them he feels unable to the task: like the writer, who in vain would sit down to a composition, without the help of books, which demands the diligence of enquiry, and the labour of research.

Every man of taste exerts himself in proposing means for the preservation of those edifices which show symptoms of ruin: their forms may, perhaps, never be lost by the power of the artist's pencil; but to look upon a time-worn pile itself, to see it grey with age, and gradually tottering to ruin, urges on us the wish to restore its fallen state; and, when it has so much suffered by time as to render its preservation impossible, then to store up in a proper museum (viz. one of architecture) fragments which tend so greatly to elucidate the manners, religion, and capabilities of a nation, is not only useful, but most praiseworthy. For these relics of the olden time, and what more particularly concerns us, the architectural remains of the middle ages, there should be a building raised solely to contain them; and the architect should aim at giving it a character by which we might judge of the end for which it was intended. Upon this principle, therefore, I am quite averse to the "Hints," or plan, of E. B. Lamb (p. 161.), in having the naves of our cathedrals used for disposing the fragments, since the uniformity of the aisles and nave would at once be destroyed; in short, I think the "beauty of holiness" would be desecrated. Our cathedrals would have the air of a museum; and, except when the thundering of the organ burst upon the ear, or the feelings of the beholder were aroused whilst he gazed with steadfast eye on the awe-inspiring vault above, and the light that streamed through the storied windows, the recollection of the sacred place where he was might never occur to him, whilst his thoughts were led away by dwelling on the various stones and pieces of sculpture which cumbered the walls. In edifices, I say, raised for far more noble views, the collections of art would be unseemly and highly improper; but if a portion of the *British Museum* were appropriated for the classification of the remains of our ecclesiastical and other buildings, or if a society were formed for this object, much good would be done.—*Antiquarius Londinensis*. April 4.

Arnott's Stove.—As we strongly recommended this heating apparatus in a former Number (p. 120.), we consider it our duty to lose no time in laying before our readers some account of the objections which have been raised against it. In the *Medical Gazette* for March 17., there is an article on the subject by Julius Jeffreys, Esq., of Kensington, the inventor of that most ingenious instrument, the respirator. The article is promised to be con-

tinued through succeeding numbers; and we have received the permission of Mr. Jeffreys, and of the proprietors of the *Medical Gazette*, to copy the articles, or make such extracts from them as we think fit.

Mr. Jeffreys informs us, in his introduction to his first article, that he is a member of the medical profession; and hence his sending his strictures to a medical publication.

“About fifteen years ago, I commenced, in the East Indies, a series of experiments on the ventilating and cooling of buildings, employing, in some instances, an upward, and in others a downward, ventilation. I put to trial a variety of mechanical means, and among them a new instrument, which, for reasons that will be explained in their proper place, proved to be the most effective of any kind of *pumping* apparatus for ventilation which I have ever seen. Subsequently, I was led to introduce several chemical arts into that country, which, while they were wholly new to India, had to be conducted in a very different manner from similar arts in Europe. My operations were on so large a scale as to employ, sometimes, 1000 workmen; and were, for the most part, connected with the use of fuel. It became necessary to subject to trial most of the furnaces used in the arts, and then to modify them, or to devise others suited to the materials, fuel, and climate, of the country. By subjecting every operation to a series of unremitted experiments, complete success attended all of them in the end; although the difficulties, in some cases, proved such as could scarcely be credited. Indeed, most of my experiments were directed to the improvement of manufacturing operations, but of many of them the object was purely scientific. In all these operations, my agents were the rude workmen of the country, to whom every thing they saw was new. It became necessary for me to conduct the making not only of large boilers, and other vessels of iron, copper, and lead; of vats, of wood and iron; of pumps, and other hydraulic apparatus; of lathes, presses, and cogged machinery; of fire-brick and stoneware of various kinds; but of furnaces also of almost every imaginable form, such as horizontal and dome furnaces; vertical, cylindrical, and prismatic kilns; reverberatory furnaces (one of which, in my saltpetre manufactory, was 12 ft. by 10 ft. inside); furnaces with the fire in the centre; furnaces with side chambers; boiler furnaces of many kinds; vaporising kilns; and a great variety of experimental furnaces and fireplaces, much too numerous to detail. In many of these, as is the case in many of the arts, the same circulation of hot air obtained, and upon the same principles, as in Dr. Arnott's thermometric stove.

“Having long practised mechanical ventilation, and been extensively engaged in the use of fuel, my thoughts were, at times, turned to plans for warming and ventilating buildings in Europe. In the tropics, the occasion for employing any of *these* did not exist; but, upon my return to England, three years ago, having matured one of them, I had the apparatus necessary made in Birmingham. I had not, however, the opportunity of erecting it at the time, and I laid my plans aside for a while, and devoted my attention to the carrying into effect the principle of an instrument which is now before the public, and which was invented shortly after my return to this country. About a year after this, I heard that Dr. Arnott had taken up the subject of warming apartments; and, considering that it could not be in better hands, I determined to allow my own plans to remain at rest; but, upon the examination of his stove, and the perusal of his work, I have been compelled to consider the different kinds of apparatus I have above referred to, of one kind of which the fire is open, and of the other enclosed, to be constructed upon principles so superior, that I purpose, ere long, bringing them before the public.

“The revolution which Dr. Arnott would work in the opinions and practice of the public on the subject of ventilation, I believe to be, not undesirable only, but highly dangerous in its consequence; tending to make the visitations of epidemical and pestilential diseases far greater scourges than they are at present to our land; and, waiving even the question of ventilation, I am pre-

pared, and therefore bound, to show that the instrument which is the chief object of his work is by no means the one best suited to the purposes it is intended for; and that the modified forms proposed for open fires, to which he returns at the close of the work, are singularly defective." (p. 960—961.)

Mr. Jeffreys proposes, in a series of articles, to treat of ventilation.

"1. Ventilation in general. 2. Ventilating and warming by recovered animal heat. 3. Ventilating and warming by the aid of combustion. 4. Mechanical ventilation." (p. 961.)

We shall endeavour to give the essence of what Mr. Jeffreys brings forward on these subjects; or, if we find his ideas do not admit of compression, we shall avail ourselves of the permission which has been kindly granted us, and give them in his own words.

"1. *On Ventilation in general*; viz. on the quantity of air desirable for man.

"In the commencement of Dr. Arnott's book on ventilation, while treating of it generally, Dr. Arnott lays down the grand principle of *abundance* in the supply of air, in language so forcible and just, that any reader would consider him the zealous advocate of a system of liberal and copious ventilation.

" 'There is,' says Dr. Arnott, 'with respect to ventilation, a popular misconception and erroneous practice, of a nature the opposite of the total neglect described in the former paragraphs: because ventilation is important, there are persons, not satisfied with enough, but who demand, at heavy sacrifices, what is excess. It would be a similar error, if a man, from knowing that water is a necessary of life, should abandon the never-failing well in his garden and his convenient home, that he might drink always from the Nile or the Ganges. A man needs, per minute, as explained in Art. 10., the oxygen of one sixth of a cubical foot of atmospheric air; but, because of the mixture of his breath with the air around him, he requires, to be safe, a ventilation supply of from two to three cubical feet per minute. Now, the ordinary workmanship of house-builders in England leaves, as crevices round the doors and windows, passage for many times three gallons per minute; besides that there is the powerful ventilation of the frequent openings of the door when persons come and go. Yet there are in England many persons, who, under all circumstances, call out for open fires and open windows, and, by the cold currents and other concomitants of a ventilation, twenty or a hundred times more than necessary, prodigiously waste fuel, and injure or kill their children and friends by catarrhs, rheumatism, pleurisies, &c. To these persons it must appear wonderful, that in Russia, where, all through the winter, there are only close stoves and double windows carefully closed, and no provision made for ventilation beyond accidental crevices, the people are very healthy, and more individuals attain a very advanced age than in almost any other country in Europe. In a room of 12 ft. in all its dimensions, and containing, therefore, 1728 cubical feet of air, there is, without any ventilation whatever, an allowance of 2 ft. a minute, for one person, for more than fourteen hours.'"

(*On Ventilating and Warming, &c.*, p. 66.)

"This paragraph is, perhaps, the most influential in the book, on account of which, and of the doctrine it inculcates, it may be considered by far the most important. The reader who carefully studies each successive sentence, will perceive a gradually progressing departure in the mind of the author from that demand for copious ventilation expressed formerly, until he at last closes, by giving countenance to the Russian system of what we should call suffocation in England. Impressed with a conviction of the prodigious importance of a right settlement of the question upon which the author has agitated the public mind, I must request my reader's attention to an analysis of each sentence in this paragraph.

" 'There is a popular misconception and erroneous practice, of a nature the opposite of the total neglect described in the former paragraphs.'

"First, let us consider what is the thing here predicated, what is affirmed by 'the popular misconception and erroneous practice.' The popular misconception, and practice, is something which the people in general *think*, and

do, in regard to ventilation. Now, what they *do*, in almost every house in the land, is to close the doors and windows in cold weather, allowing more or less leakage through the crevices; and to employ a fire under an open chimney, which, while it warms the apartment, excites such a steady and powerful draught in the chimney, as to insure a pressure inwards of fresh air into the room at all the crevices; and what they *think* is, that this fresh air, if inconvenient, is at least highly salubrious to the majority of persons. This, then, is 'the popular misconception, and erroneous practice.' Again, in the former paragraphs, the 'total neglect' of supplying air was not the only thing described; salutary ventilation was also described, by comparing it to the constant flowings of a trout stream; and a copious supply of fresh air was contended for, by showing how the fishes would perish if deprived of this wonted supply of their native element. If illustrations mean anything, if a long line of argumentation means anything, the 'misconception, and erroneous practice,' of the people of England is a demand for, and a command of, a quantity of fresh air in their dwellings, which does, in reality, fall far short of the quantity advocated in those former paragraphs. It is next said, 'because ventilation is important, there are persons not satisfied with enough, but who demand, at heavy sacrifices, what is excess.' It was formerly argued in those paragraphs, not that ventilation only was important, but that *copious* ventilation was so; the 'enough' ought, then, to be understood as meaning such copious ventilation; but 'the demand, at heavy sacrifices, for what is excess,' means, by the whole context, only that demand which is usual in England; namely, the common quantity which enters by the crevices, and passes up our chimneys. If the copious ventilation contended for at the beginning of the chapter meant a less quantity even than this, to what purpose was the strong language there employed, and the still more striking illustrations? Again, as the author is, throughout, contending against things which are popular and general, and not merely against individual cases of eccentricity, it is a great pity that the poignancy of the doctrine now enforced against the usual supply of fresh air should be softened down by employing the expression, 'there are persons not satisfied with enough;' instead of saying, 'the people in general are not satisfied with enough.' By the latter expression, the reader would at once perceive that the ordinary quantity of air which it has been considered wholesome to let into our houses in the usual way, namely, through the crevices, aided by the chimney draught, is the quantity which he is here required to consider as excessive; so excessive, indeed, that the following comparison is employed to set it forth:—'It would be a similar error, if a man, from knowing that water is a necessary of life, should abandon the never-failing well in his garden, that he might drink always from the Nile or the Ganges.' The using of this comparison is no other than begging the question. Let it first be shown, by right reason and rigid experiment, that the air we are accustomed to let into our rooms bears a proportion to that we need, even as large as does the water in a never-failing well to the little that a man can drink. The experiment may appear not practicable; but it is, in fact, being made every day by thousands; and it tells wonderfully against the author's comparison and argument. A man very soon drinks to satiety, and can take no more with benefit: any more water is useless, or injurious to him, at the time. The quantity of air a man breathes has also its limit, but there would seem no limit to the quantity of fresh air* which is beneficial, as is proved by every comparison between those who occupy themselves within doors, and those whose occupation is in the open air. All the air, therefore, we ever have at any one time entering our houses falls short of the quantity which

* The care to have it warmed when it is to be enjoyed within doors, is quite another question; and I engage to present the public with apparatus which shall effect this thoroughly, and with abundant economy, and no overheating of the air.

can do us good ; but the water entering a never-failing well greatly exceeds the quantity which can do a man good at any one time ; so that the air entering our houses falls short in comparison with the water of a never-failing well even, and how incomparably short of a Gangetic or Nilotic ocean ! Before such a comparison had any reality in it, it would be needful to show that the people of England had left the insides of their houses to live upon the house-tops, or in open sheds. The author proceeds :—‘ A man needs, per minute, as explained in Art. 10., the oxygen of one sixth of a cubical foot of atmospheric air ; but, because of the mixture of his breath with the air around him, he requires, to be safe, a ventilation of from two to three cubic feet per minute. Now, the ordinary workmanship of house-builders in England leaves, as crevices around doors and windows, passage for many times three gallons per minute ; besides that there is the powerful ventilation of the frequent openings of the door when persons come and go.’

“ I will remark upon the latter part of this sentence first ; since cubic feet have been, throughout, the term employed by the author to measure the air by, and, as he had just said, ‘ from two to three cubic feet were needed,’ it is a pity that the expression ‘ many times three gallons ’ should have been used, when the actual supply was being spoken of, for the argument would lead a reader to suppose that many times three of the first measure were being promised him ; and, unless watchful, he would overlook the new term ‘ gallons.’ It is therefore to be regretted that, having commenced the argument in *cubic feet*, the author should have closed it in gallons. Now, a gallon being barely the sixth part of a cubic foot, many times three gallons may still be under one time three cubic feet. The quantity must exceed four times three gallons, or it will be under two cubic feet even. What the leakage really amounts to, in any one case, or whether the author meant cubic feet, and not gallons, as the measure of it, it is not possible to form any judgment of, without knowing what crevices there are, and what the pressure from without is. The quantity of air entering will vary according to the form and collective amount of all the crevices by which it is entering the room, and the facility by which it can pass out again, and also according to the square root of the difference between the external and internal pressure. In how disadvantageous a light this law places Dr. Arnott’s stove, when compared with open fires, will be shown hereafter. In the former part of the passage just quoted, reference is made to Art. 10. of the work, where we find it stated :—‘ In respiration or breathing a man draws into his chest, at one time, about twenty cubic inches of air, and of that a fifth is oxygen, of which again there is converted into carbonic acid gas nearly one half.’ To suppose that the lungs employed so much as one half of the oxygen of the air of ordinary respiration, would be to familiarise ourselves with the idea that our lungs are tougher-working organs than they really are ; and it might be argued by some, if they can endure to retain air in their vessels until one half of its oxygen has been vitiated, they cannot be very sensitive, very needful of perfectly pure air ; whereas, if only one sixth or one eighth of the oxygen of the air we inhale is employed ; if the air vessels, which the air of our ordinary respiration traverses, reject and have done with air, of which, being so delicate, they can only make use of this small quantity ; how very pure ought the air to be in the first instance ! I am aware of the experiments, on record, of able chemists, showing that, while in the chest, air loses from a fourth to one half of its free oxygen ; and from these, it is to be presumed, the author has drawn his information. If he had afforded the subject more attention, he must have been led to draw a distinction between the two very different conditions in which the air in our lungs is. One, and by far the larger, portion is that which is deep-seated, occupying the finer ramifications and extremities of the air vessels : its quantity varies, probably, from 100 to 200 cubic inches. With this air the lungs are more or less distended during life ; and *it* manifestly must undergo but a very gradual renewal ; for, since a very little of it only is discharged with the air of each respiration, very many acts of ordinary

respiration must be performed before this air can be changed. If *this* air should be breathed out into a vessel, I have no doubt that one half of the oxygen it had contained would be found converted into carbonic acid; and I imagine that it must have been upon this deeper-seated air, which comes forth only by a forced expiration, or sigh, that the experiments referred to have been made. Indeed, for the purpose of catching a quantity of the air from the lungs, it is highly probable that a long and deep expiration was practised in those experiments, which were doubtless very correct, but which cannot rightly be applied to the air of our present question: this last air is in a very different predicament; being changed at every ebb and flow of each act of respiration, it is but a short time in the chest, and appears to occupy only the upper part and the larger vessels. In quantity it may not exceed from 15 to 25 cubic inches, and it is *this* air, of course, which, being the air of ordinary respiration, is that of which the author is treating.

“At his low estimate of fifteen respirations in a minute, about 300 cubic inches of air would be breathed each minute, or nearly 93 grains in weight; and in 24 hours, 133,920 grains, of which the oxygen would amount to 31,471 grains: if half of this, or 15,735 grains, were converted into carbonic acid, it would require fully three eighths of its weight, or 5900 grains, of carbon to combine with it, in order that it should be converted into that acid. Now, taking our driest food, bread, even it has so much moisture and other elements in it, that we shall find it does not contain, as it comes from the oven, more than about one fifth of its weight of pure carbon. A quartern loaf, therefore, may contain about the above quantity (5900 grains) of carbon. In order, then, to supply the carbonic acid generated in his lungs at the rate stated by the author, a man would have to eat a quartern loaf daily for this purpose alone, in addition to all the food necessary for his nutrition, and to supply the ordinary excretions of the body; and fearfully rapid would be the emaciation of those whose appetites fell short of such voracity! Had such an out-going of carbon been really necessary for our existence, we should certainly have been constituted, like the termites, or white ants, of the tropics, with appetites to enjoy, and powers to digest, ligneous fibre itself; otherwise, a man's whole labour devoted to tillage would barely supply him with the primary necessary of life alone. All civilisation and philosophy would be sacrificed to a furious and unproductive out-breathing of carbon. The author proceeds:—

“‘Yet there are in England many persons, who, under all circumstances, call out for open fires and open windows, and, by the cold currents, and other concomitants of a ventilation twenty or a hundred times more than necessary, prodigiously waste fuel, and injure, or kill, their children and friends by catarrhs, rheumatism, pleurisies, &c.’ Open fires are one thing, and open windows another. I confess myself to be a warm advocate for open fires (though I would have them employed in a different manner); but I do not know of any persons, who, under any circumstances, excepting, perhaps, to sweeten a house of a morning, call out for open windows from the month of October, at least, to that of April; and, under certain circumstances, only in the summer. It is, indeed, a pity that the author should connect together so very different desires as that for open fires, and that for open windows; and, by the help of an alliteration, by repeating in the reader's ear the sound of the epithet open, should endanger in his mind such a connecting of the two, as would charge the one with the absurdities of the other. Is it the ordinary ventilation excited by open fires through the crevices of *closed* windows and doors, or is it a ventilation unheard of elsewhere, through windows thrown open, which is said to be so prodigiously more than necessary, and so destructive to the public health? It were far better for the subsidence of error in the public mind to let the subject rest, than to handle it in such a manner: the continuance of any existing error were preferable to that which must arise from interweaving two very different categories (a state of things with open fires, and that with open windows), in such a manner as that the former shall

have to bear, by the implication, accusations which could with justice be applied only to the latter. Of the healthiness of country children, accustomed to ill-fitted doors and windows, I shall presently have occasion to speak; but who ever heard of sitting with windows thrown open, excepting in the dog-days? The context throughout, and the whole drift of the argument, clearly mean, that the ventilation which prevails universally in England in our houses is exorbitantly great, and the cause of all these diseases. The usual method of supplying untempered air through crevices only is a practice no one can more earnestly desire to see altered than myself, as the public will in due time be satisfied; but, while I would greatly desire a change in our system of ventilation, I would increase rather than diminish its quantity, convinced that these (the diseases of our climate) arise, in the great majority of cases, from that *occasional* and *unaccustomed* exposure, against which it is almost impossible to be always on our guard, but against the effects of which all our experience proves that we are rendered less and less susceptible, in proportion as we accustom ourselves to a more and more frequent renewal of the air in which we live; and there is no reason why it should not be renewed with tempered air; but in that case I am prepared to show that the thermometer stove is an apparatus by no means well calculated for the purpose." (p. 961—967.)

"I take the liberty of mentioning a case, remarkably illustrative of the fact, that freshness of air in a house lessens, instead of increases, the liability of the inmates to take cold; although I am aware, while apparently necessary, it was a bold experiment, which could not always be followed, inasmuch as it was unmitigated air which was so freely admitted.

"In her father's house, a lady had been accustomed to rooms in which the ventilation was greatly lessened by close fittings and felt. Yet, since open fires were used, there could not fail, as will be shown hereafter, to be more air admitted than by the use of Dr. Arnott's stove in the common way. In her own house, accordingly, she followed up this plan. The house was made very secure, and the children, though allowed plenty of exercise, were kept as snugly as possible from every draught; nevertheless, they were always catching colds; and the more she checked draughts, the more they ailed, catching also every epidemic that prevailed. Living in the country, she was led to contrast with her own the healthy children of the farmers around; and, observing their ill-fitted casements and doors, and open fires, with large-mouthed chimneys, resolved boldly to copy what she saw. Having removed to an old-fashioned house, with doors and windows fitting as badly as she could desire, she allowed them to remain as they were, and the children to run constantly, even in cold weather, in and out of the parlour door, which opened into the garden. Such has been her course for some years. Her children now know not what it is to take cold; and, although one has a constitutional tendency to an affection in the head, which grew alarming under a system of ventilation more liberal even than the thermometer stove alone can insure, they are now the pictures of health.

"I trust I shall be excused for having occupied my reader's time with this case, since it appears to me an instructive one; not because with a profusion of fresh air the family grew so healthy, for there are farm-houses in every part of the country presenting the same aspect, but because this, which was the extreme of what Doctor Arnott pronounces to be the catarrh and pleurisy-exciting system, did actually deliver them from the catarrhs which, under a different system, they were constantly suffering from. Once more, I would repeat that this extreme course is not held up for general imitation; that it would not answer in the case of delicate constitutions; and that for these the air should be rendered mild, but its salutary copiousness should, if possible, be retained.

"Having brought himself and his reader gradually over from the advocacy (if strong language and illustrations mean anything) of a system of more copious ventilation than is usual, to one of much more confined ventilation, it seems necessary, lest there should be any misgivings in the reader's mind,

any wonted longings after fresher air, that his thoughts should be familiarised with a Russian state of things, where almost no ventilation exists, and in such a manner, that penny-a-day ventilation may be associated together in his mind with long life and rubicundity. The author, therefore, continues, 'To these persons' (namely, all the people who are advocates for open fires), 'it must appear wonderful, that in Russia, where, all through the winter, there are only close stoves, and double windows carefully closed, and no provision made for ventilation, beyond accidental crevices, the people are very healthy; and more individuals attain a very advanced age than in almost any other country in Europe.' On reading this Russian argument, one is led to exclaim, What has become of the case of the poor Buckinghamshire lace-makers, and where is now its contrast, the delicious trout stream of the author's imagination? Alas, he has left it far off upon the opposite side, and has taken up his abode in a land of suffocation! As this argument, however, is not without plausibility, and as it may have weight with many readers in favour of what I believe would be a dangerous revolution in popular feeling, it is necessary to request of my reader an attentive examination of it.

"The squalid appearance of the inhabitants of very northern regions, after their six-months' inhumation, travellers have often noticed. I had supposed the appearance of the Russian poor, who were much at home, must have partaken to some extent of such effects of close confinement; and that although, as in most simpler states of society, individual cases of longevity might be more common there than in England, England had greatly the advantage over Russia as to the chances, or average duration, of human life. The case, however, with which we have to deal is not at all affected by the author's argument. The Russian might be able to live for ever without air, like a toad in a stone, and it would be no proof that the system would answer in England, where all our experience, as formerly shown by the author himself, is against it. The Buckinghamshire lace-makers, for instance, have been trying the experiment for years, even in a more moderate degree, for they *have the opening of the chimney*, and it has miserably failed, disease and early death being the effects of a stifling system, practised in a greater degree with impunity, if not with vigour, by the Russian poor. The reason of this there will be no difficulty in seeing.

"The quantity of ventilation necessary for man decreases in some very high degree with the temperature of the climate. It may not be easy to explain upon what physical cause this depends; how the animal system is so modified by climate, as to require the presence of so disproportionate quantities of air in different climates; but the fact is an unquestionable one in regard to the several climates with which Englishmen are most familiar, and our author's very argument establishes it in Russia. In tropical countries (in India, for instance), we find it necessary to build houses with gigantic doors and windows, to the English eye, at first, out of all proportion large and numerous. This is not done for the sake of coolness only; for the mean temperature, during the hot seasons, is much lower in houses which have massive walls, and few and small doors and windows. It is chiefly for the sake of fresh air. And, although these large and numerous doors and windows, ill-fitted as they are, allow of a leakage, when closed, manifold greater than our similar ventilation in England, it is still necessary to throw them all open for several hours every night, even when the outer air, as is oftentimes the case, is much hotter than the inner. In the western provinces of India especially, from the month of March to the middle of July, during the whole twenty-four hours, the air out of doors is hotter than that within. Nevertheless, although air passes freely through the house all the day, not by crevices only, but through doorways, before which are wetted surfaces, which, while they cool the air, give free passage to it, so that it might be supposed more ventilation could not possibly be needed, it does still prove necessary to throw aside, some time after sunset, every window and door for several hours. Any family neglecting this practice, soon declines in health. Here is

a case, where, in an oppressively hot climate, a great sacrifice of coolness has to be made to freshness. It will not be said that all this air is wanted merely to carry off the increased perspiration in a tropical climate, for the quantity is ten thousand times more than would be abundant for that purpose. Compared with this ventilation, any in England is as nothing. Is it not plain, then, that, as a ventilation, to be tolerable in India, must be a hundred-fold what will suffice in England, so a ventilation, to be tolerable in England, must be manifold greater than what may do in Russia? Hence, the Buckinghamshire women failed deplorably when they experimented with Russian ventilation, or rather non-ventilation, here, just as would any family in India which should try English ventilation in that country. The author's Russian argument, therefore, though a dangerous one, must, if rightly understood, go for nothing. The closing sentence of the paragraph remains to be noticed:— 'In a room of 12 ft. in all its dimensions, and containing, therefore, 1728 cubical feet of air, there is, without any ventilation whatever, an allowance of 2 ft. a minute for one person for fourteen hours.' The author, though not meaning it, of course, speaks, in this place, as if the air could be used in distinct parcels until the whole was consumed, each parcel being put aside as it was done with, like a heap of waste paper, so as not to contaminate the rest. Whereas (as he has himself said elsewhere) every breath mixes with all the rest: the whole air is soon a little tainted, and ought then, without delay, to be renewed.

"The time has now come for us to notice a grand omission of the author. He has, throughout all his arguments, spoken only of the demand of the lungs for oxygen, and of the presence of the carbonic acid they give off. He has said nothing of the animal impurities, of a much more pernicious kind, thrown off profusely both by the lungs and by the skin. The air of an assembly, of which so little has been used by the lungs that the chemist cannot detect any diminution in its oxygen, nor any of the carbonic acid they have added to it, may in the meantime have become very oppressive on account of animal impurities of the other kind so freely discharged into it; and, if he were to lock up the assembly, until he could discover, with all his skill, the presence of any considerable quantity of carbonic acid, he would have sealed the fate of most of them, by forcing them to imbibe their own poison; matter, though less offensive, perhaps, yet as truly animal off-scourings, as thoroughly excrementitious, as any that goes forth into the draught. I make no apology for using expressions which, under other circumstances, would be unpardonably coarse. It would be a mistaken affectation which should hesitate to do so upon the present, a question of vital importance. The above is a fact, which no physiologist will venture to deny: it is one which cannot be too generally known by the public. Moreover, the confined habit of body of a large portion of our city population, especially of the sedentary classes, is such, that the skin and the lungs, in addition to these their natural duties, have to throw off in vaporous discharges much that ought to pass off in another way. So deleterious are all these matters to the health, that, as the author himself has shown in his introduction, pestilential diseases have decreased in our land, in proportion as our streets and our houses have become wider and more airy. What now must be thought of objecting to the bare ventilation which our houses, with their open fires, commonly afford us; nay, to the indulgence in any quantity of air which we can severally afford to warm?

"Such is the beneficial influence of fresh air over the body, that, as experience proves, with all the trying vicissitudes of weather opposing him, the more nearly a person can live in the open air, the better, for the most part, will his health be. The ploughman enjoys more vigorous health than the equally hard-working mechanic; and the coachman, seated on his box, than the accountant at his desk. It cannot be said that exercise is the chief agent in effecting this difference, for a joiner in his workshop, even with much more air flowing into it than the quantity the author has set as a maximum, does not, in general, present the hearty aspect of a coachman or a guard, although the

work of the former throws all his muscles into the most useful exercise, and the occupation of the latter has the defect of being sedentary; showing that exercise, even confessedly beneficial as it is, cannot make up the difference between the effect, not of a very confined, but of a fairly ventilated, place and the open air. With regard to exercise, it is of importance to remark how subservient is its influence to that of the open air. It loses greatly of its beneficial powers, nay, often proves injurious, when deprived of fresh air to give effect to it. It is very common to hear warehousemen and mechanics complaining that the work is too much for their health; work less laborious, in general, than that with which the hedger and ditcher, or the lighterman, is familiar. The effect of the exercise of the former persons appears often to fall unequally upon the system, and therefore too heavily upon some one part; while upon those who work abroad it would seem to be more equally diffused. Determinations to the head, the heart, the lungs, &c., being, I believe, much more common effects of labour within doors than of labour without.

“ If the presence of the air of heaven around the body, *without measure*, is unquestionably beneficial, the benefit increasing, if the weather is mild, with the speed with which it passes over the body, a windy being more invigorating than a calm day, and a seat outside of a coach than one even with the windows open inside, are there any properties in brick and mortar which empower them to subvert this order of things within doors? It is true that the body at rest cannot endure cold or draughts. These, of course, must be afforded the fullest consideration; and it will then be obvious that the only limit to that quantity of fresh air which is desirable, that quantity which is to exercise the most salutary influence on the human frame, is to be found at the point where the current excited in the air commences to be too strong, or the expense of warming it too considerable. What limit is there, then, to the quantity of fresh air a person should be allowed within his house, if he can introduce it without draughts, and if he can afford to warm it? Nay, if such a person should be philosophical, and should have ascertained that one sixth of a cubic foot of air per minute will do for the breath, and should prudently have allowed two cubic feet, on account of the constant mixing of the damaged with the fresh air, and should liberally, as he thought, have apportioned to himself two or three cubic feet of air per minute, and should be satisfying himself that the air of his apartment ought therefore to be warmed for less than a penny a day; would it not be the duty of any friend, upon whose mind the previous and a multitude of other evidence which might be cited to the same effect, were exercising their proper influence, to contend against economy such as this, as of a very erroneous kind? Might he not say, I will not dispute your philosophy, whether I can admit your measurements or not; but I affirm that, unless miserably poor, you ought to be seeking fresh air in quantities compared with which all that is indispensable for mere existence is but an indefinitely small fraction. You have before you irrefragable, irresistible proof, that, to air flowing over them in boundless quantities myriads of your fellow men do chiefly owe their hale and vigorous health. It is but a small part of this which, sedentary and within doors, you can command; but do not reduce this quantity, limited as it must be, five hundred-fold more. Enquire not upon how trifling a sum you can manage to warm air for your rooms, carefully meted out in cubic feet; but, of the two, rather enquire what is the utmost sum you can afford towards warming and introducing it in unmeasured quantities into your house. If you will alter your supply, increase its quantity by all means, but on no account think of diminishing it. Behold the hale looks of your neighbour, whose occupation keeps him always abroad; and ask yourself if any, or if all of your luxuries together, are capable of doing for your health what boundless fresh air is doing for his, and be guided by your own reply. You will then give your luxuries up, one and all, rather than part with any of the little air compared with his, which you already have.

“ To the poor man this argument may with great, if lessened, force be applied. To him it may be said, that no person ever yet could prove the *habitual* use of

any quantity of beer or spirits to be necessary, nay even to be beneficial, to the health; that they may be a luxury, but not certainly a necessary; whereas no one can deny the very beneficial effects of abundant fresh air. Give up, then, your useless beer and pernicious spirits, and devote a part of the saving to the warming of more air for your family. Let him be offered every assistance towards employing his fuel more economically, but never by any plan which does not insure to him his former supply of fresh air, at the least. Any plan which involves with it a yielding up of a portion of fresh air should be considered as applicable only to the cases of the destitute, who have no lesser necessities to part with, rather than to sacrifice any portion of so great a one.

"Defective as the open cottage fire is in some respects, the ventilation, which it not only permits but vigilantly insures, is a redeeming quality of far greater importance. If the chimney draught were put an end to by the use of close stoves, in the manner recommended by the author, impure and infectious effluvia would not, as now, be hurried away up the chimney ere they had time to excite disease, but they would circulate for hours about the rooms of the poor before they were completely removed through the crevices; and it is too probable that, when an epidemic was lighted up, it would not, as now, commonly attack a few of the inmates only, but would, as in some countries, waste itself upon the whole family with aggravated force. I will not here anticipate matter belonging to my third division — warming and ventilating by the aid of combustion. Under that head, it will be shown that the favourable comparison the author has drawn regarding the ventilating powers of the thermometer stove will not stand the trial either of careful reasoning or of experiment.

"In concluding this portion of my subject, I have to express a hope that my humble endeavour to defend the general opinions of Englishmen in favour of the free ventilation insured by open chimneys, against the arguments opposed to them by the author in the treatise before us, especially in Art. 82., upon which I have commented at some length, will not appear to my reader either as uncalled for or unsuccessful. It has been rendered especially necessary by the promising manner in which the author commences his work as the advocate of ventilation, so copious, that any reader must understand by it a larger, instead of a less, supply than is usual in our dwellings, and may thereby be placed off his guard, and be in all the greater danger of lapsing into the subsequent bias of the author's mind. The vast importance of the questions to the well-being of the community on the one hand, and the weight of the author's authority on the other, do also add to the necessity of a commentary such as I desire to conduct with right reasoning and candour.

"Viewing the thermometer stove as consisting of two distinct parts, the stove itself, and the thermometric regulator, with regard to the advantages of the former I have to observe, that, if my reader has made up his mind to close up his chimney, he will, I believe, find the stove itself to be superior to any other *close-air stove* at present in ordinary use for domestic purposes; and that the superiority will prove mainly to consist in the surrounding of the fire with brick, and the command over the draught by close fittings, and by a regulator on the ash-pit door. These points have for centuries been attended to minutely by careful chemists and artists, and a perfect command has thereby been obtained over the heat of the fire, and over the consumption of the fuel. These provisions have also been imitated in many domestic stoves; but in so rude and inefficient a manner, that, in practice, little command has been obtained over the draught, and little, therefore, over the consumption of fuel and heat, although the subject has not been neglected by former writers. For having drawn their attention to these important points again, the public are indebted to Dr. Arnott." (*Med. Gaz.*, April 7., p. 49.)

THE ARCHITECTURAL MAGAZINE.

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ORIGINAL COMMUNICATIONS.

ART. I. *The Poetry of Architecture.* By KATA PHUSIN.

No. 3. THE VILLA.

I. *The Mountain Villa. — Lago di Como.*

IN all arts or sciences, before we can determine what is just or beautiful in a group, we must ascertain what is desirable in the parts which compose it, separately considered; and therefore it will be most advantageous in the present case, to keep out of the village and the city, until we have searched hill and dale for examples of isolated buildings. This mode of considering the subject is also agreeable to the feelings, as the transition from the higher orders of solitary edifices, to groups of associated edifices, is not so sudden or startling, as that from nature's most humble peace, to man's most turbulent pride.

We have contemplated the rural dwelling of the peasant; let us next consider the ruralised domicile of the gentleman: and here, as before, we shall first determine what is theoretically beautiful, and then observe how far our expectations are fulfilled in individual buildings. But a few preliminary observations are necessary.

Man, the peasant, is a being of more marked national character, than man, the educated and refined. For nationality is founded, in a great degree, on prejudices and feelings inculcated and aroused in youth, which grow inveterate in the mind as long as its views are confined to the place of its birth; its ideas moulded by the customs of its country, and its conversation limited to a circle composed of individuals of habits and feelings like its own; but which are gradually softened down, and eradicated, when the mind is led into general views of things, when it is guided by reflection instead of habit, and has begun to lay aside opinions contracted under the influence of association and prepossession, substituting in their room philosophical deductions from the calm contemplation of the various tempers, and thoughts, and customs, of mankind. The love of its country will remain with undiminished strength in the

cultivated mind, but the national modes of thinking will vanish from the disciplined intellect. Now as it is only by these mannerisms of thought that architecture is affected, we shall find that, the more polished the mind of its designer, the less national will be the building ; for its architect will be led away by a search after a model of ideal beauty, and will not be involuntarily guided by deep-rooted feelings, governing irresistibly his heart and hand. He will therefore be in perpetual danger of forgetting the necessary unison of scene and climate, and, following up the chase of the ideal, will neglect the beauty of the natural ; an error which he could not commit, were he less general in his views, for then the prejudices to which he would be subject, would be as truly in unison with the objects which created them, as answering notes with the chords which awaken them. We must not, therefore, be surprised, if buildings bearing impress of the exercise of fine thought and high talent in their design, should yet offend us by perpetual discords with scene and climate ; and if, therefore, we sometimes derive less instruction, and less pleasure, from the columnar portico of the Palace, than from the latched door of the Cottage.

Again : man, in his hours of relaxation, when he is engaged in the pursuit of mere pleasure, is less national than when he is under the influence of any of the more violent feelings which agitate every-day life. The reason of this may at first appear somewhat obscure, but it will become evident, on a little reflection. Aristotle's definition of pleasure, perhaps the best ever given, is, "an agitation, and settling of the spirit into its own proper nature ;" similar, by the by, to the giving of liberty of motion to the molecules of a mineral, followed by their crystallisation, into their own proper form. Now this "proper nature," *ὑπάρχουσιν φύσιν*, is not the acquired national habit, but the common and universal constitution of the human soul. This constitution is kept under by the feelings which prompt to action, for those feelings depend upon parts of character, or of prejudice, which are peculiar to individuals or to nations ; and the pleasure which all men seek is a kind of partial casting away of these more active feelings, to return to the calm and unchanging constitution of mind which is the same in all. We shall, therefore, find that man, in the business of his life, in religion, war, or ambition, is national, but in relaxation he manifests a nature common to every individual of his race. A Turk, for instance, and an English farmer, smoking their evening pipes, differ only in so much as the one has a mouth-piece of amber, and the other one of sealingwax ; the one has a turban on his head, and the other a nightcap ; they are the same in feeling, and to all intents and purposes the same men. But a Turkish janissary and an English grenadier differ widely in

all their modes of thinking, feeling, and acting, they are strictly national. So again, a Tyrolese evening dance, though the costume, and the step, and the music may be different, is the same in feeling as that of the Parisian guinguette; but follow the Tyrolese into their temples, and their deep devotion and beautiful though superstitious reverence will be found very different from any feeling exhibited during a mass in Notre-Dame. This being the case, it is a direct consequence, that we shall find much nationality in the Church or the Fortress, or in any building devoted to the purposes of active life, but very little in that which is dedicated exclusively to relaxation, the Villa. We shall be compelled to seek out nations of very strong feeling and imaginative disposition, or we shall find no correspondence whatever between their character, and that of their buildings devoted to pleasure. In our own country, for instance, there is not the slightest. Beginning at the head of Windermere, and running down its border for about six miles, there are six important gentlemen's seats, villas they may be called, the first of which is a square white mass, decorated with pilasters of no order, set in a green avenue, sloping down to the water; the second is an imitation, we suppose, of something possessing theoretical existence in Switzerland, with sharp gable ends, and wooden flourishes turning the corners, set on a little dumpy mound, with a slate wall running all round it, glittering with iron pyrites; the third is a blue dark-looking box, squeezed up into a group of straggly larches, with a bog in front of it; the fourth is a cream-coloured domicile, in a large park, rather quiet and unaffected, the best of the four, though that is not saying much; the fifth is an old-fashioned thing, formal, and narrow-windowed, yet grey in its tone, and quiet, and not to be maligned; and the sixth is a nondescript, circular, putty-coloured habitation, with a leaden dome on the top of it. If, however, instead of taking Windermere, we trace the shore of the Lago di Como, we shall find some expression and nationality, and there, therefore, will we go, to return, however, to England, when we have obtained some data by which to judge of her more fortunate edifices. We notice the Mountain Villa first, for two reasons; because effect is always more considered in its erection, than when it is to be situated in a less interesting country, and because the effect desired is very rarely given, there being far greater difficulties to contend with. But one word more, before setting off for the south. Though, as we saw before, the gentleman has less *national* character than the boor, his *individual* character is more marked, especially in its finer features, which are clearly and perfectly developed by education; consequently, when the inhabitant of the villa has

had anything to do with its erection, we might expect to find indications of individual and peculiar feelings, which it would be most interesting to follow out. But this is no part of our present task ; at some future period we hope to give a series of essays on the habitations of the most distinguished men of Europe, showing how the alterations which they directed, and the expression which they bestowed, corresponded with the turn of their emotions, and leading intellectual faculties : but at present we have to deal only with generalities ; we have to ascertain, not what will be pleasing to a single mind, but what will afford gratification to every eye possessing a certain degree of experience, and every mind endowed with a certain degree of taste.

Without further preface, therefore, let us endeavour to ascertain what would be theoretically beautiful, on the shore, or among the scenery of the Larian Lake, preparatory to a sketch of the general features of those villas which exist there, in too great a multitude to admit, on our part, of much individual detail.

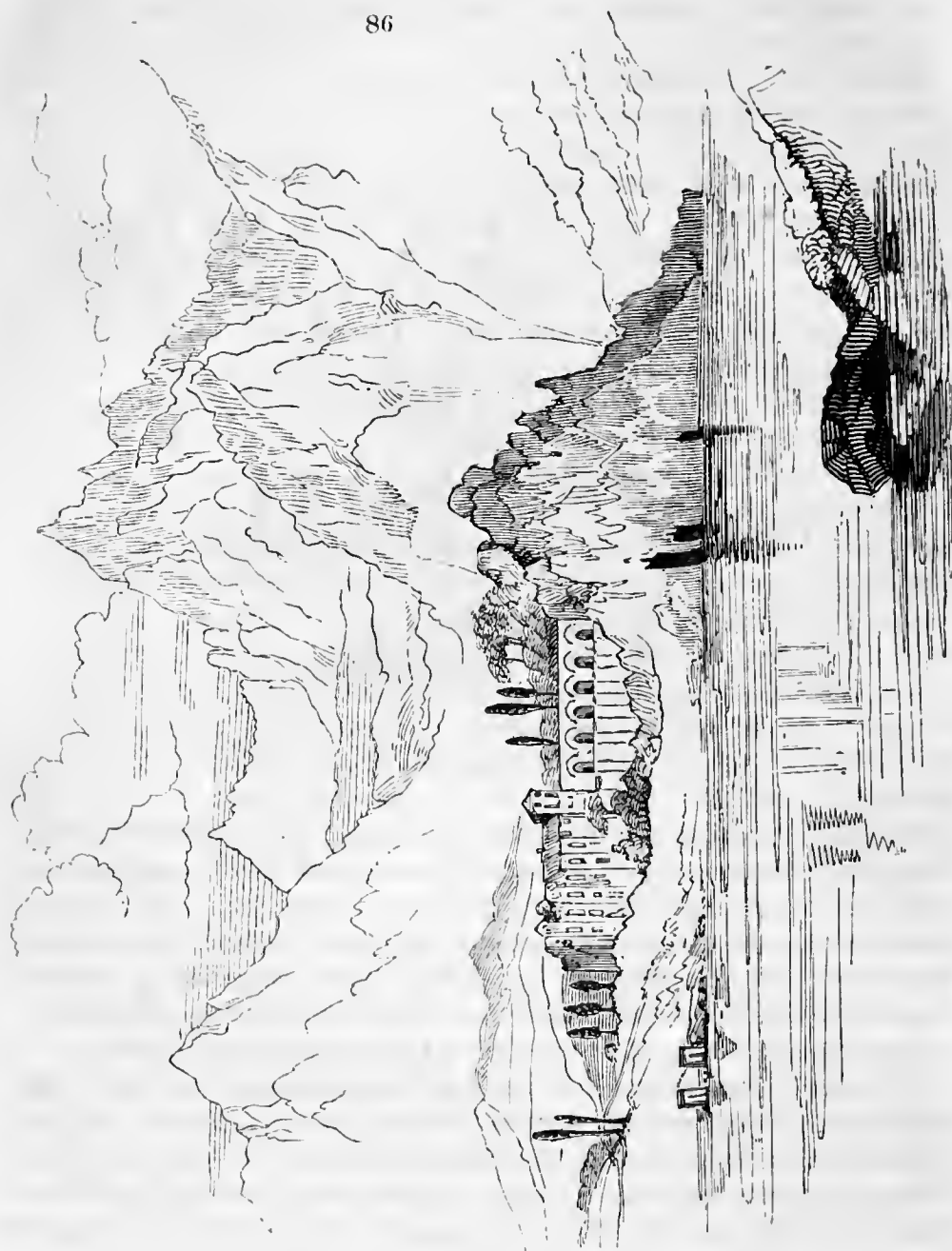
For the general tone of the scenery, we may refer to the paper on the Italian cottage ; for the shores of the Lake of Como have generally the character there described, with a little more cheerfulness, and a little less elevation, but aided by great variety of form. They are not quite so rich in vegetation as the plains : both because the soil is scanty, there being, of course, no decomposition going on among the rocks of black marble which form the greater part of the shore ; and because the mountains rise steeply from the water, leaving only a narrow zone at their bases in the climate of Italy. In that zone, however, the olive grows in great luxuriance, with the cypress, orange, aloe, myrtle, and vine, the latter always trellised.

Now, as the situation of the cottage, we have already seen that great humility was necessary, both in the building and its site, to prevent it from offending us by an apparent struggle with forces, compared with which its strength was dust : but we cannot have this extreme humility in the villa, the dwelling of wealth and power, and yet we must not, any more, suggest the idea of its resisting natural influences under which the Pyramids could not abide. The only way of solving the difficulty is, to select such sites as shall seem to have been set aside by nature as places of rest, as points of calm and enduring beauty, ordained to sit and smile in their glory of quietness, while the avalanche brands the mountain top, and the torrent desolates the valley ; yet so preserved, not by shelter amidst violence, but by being placed wholly out of the influence of violence. For in this they must differ from the site of the cottage, that the peasant may seek for protection under some low rock or in some narrow dell, but the

villa must have a domain to itself, at once conspicuous, beautiful, and calm.

As regards the form of the cottage, we have seen how the Westmoreland cottage harmonised with the ease of outline so conspicuous in hill scenery, by the irregularity of its details; but, here, no such irregularity is allowable or consistent, and is not even desirable. For the cottage enhances the wildness of the surrounding scene, by sympathising with it; the villa must do the same thing, by contrasting with it. The eye feels, in a far greater degree, the terror of the distant and desolate peaks, when it passes down their ravined sides to sloping and verdant hills, and is guided from these to the rich glow of vegetable life in the low zones, and through this glow to the tall front of some noble edifice, peaceful even in its pride. But this contrast must not be sudden, or it will be startling and harsh; and therefore, as we saw above, the villa must be placed where all the severe features of the scene, though not concealed, are distant, and where there is a graduation, so to speak, of impressions, from terror to loveliness, the one softened by distance, the other elevated in its style: and the form of the villa must not be fantastic or angular, but must be full of variety, so tempered by simplicity as to obtain ease of outline united with elevation of character; the first being necessary for reasons before advanced, and the second, that the whole may harmonise with the feelings induced by the lofty features of the accompanying scenery in any hill country, and yet more, on the Larian Lake, by the deep memories and everlasting associations which haunt the stillness of its shore. Of the colour required by Italian landscape we have spoken before, and we shall see that, particularly in this case, white or pale tones are agreeable.

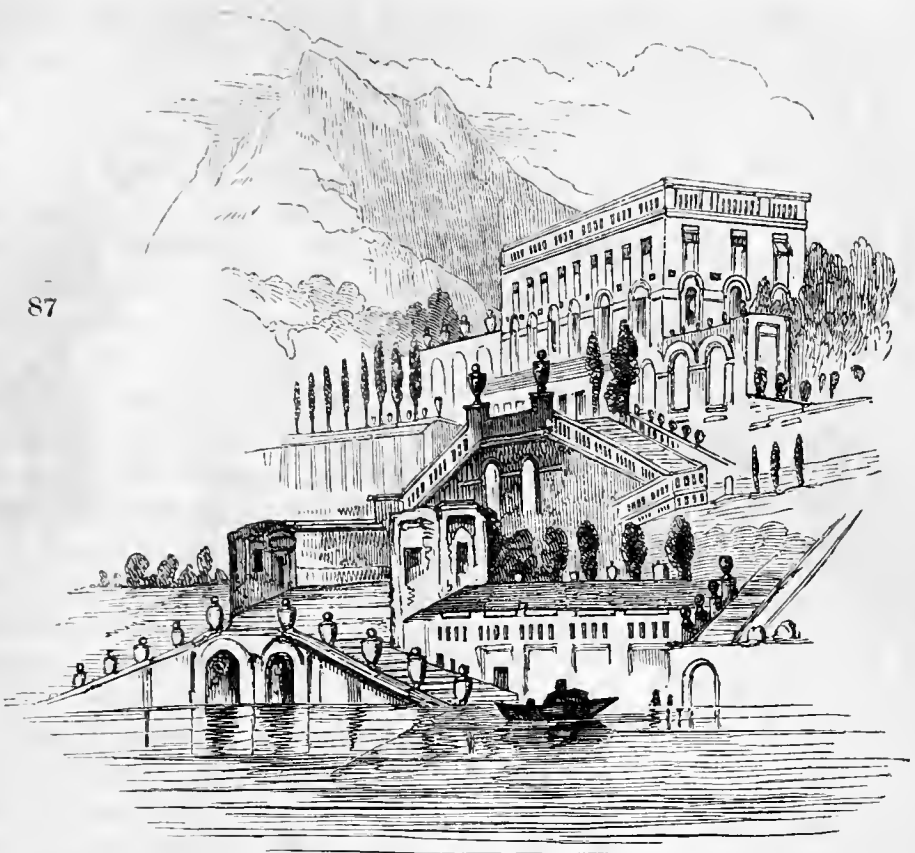
We shall now proceed to the situation and form of the villa. As regards situation; the villas of the Lago di Como are built, *par préférence*, either on jutting promontories of low crag covered with olives, or on those parts of the shore where some mountain stream has carried out a bank of alluvium into the lake. One object proposed in this choice of situation is, to catch the breeze as it comes up the main opening of the hills, and to avoid the reflection of the sun's rays from the rocks of the actual shore; and another is, to obtain a prospect up or down the lake, and of the hills on whose projection the villa is built: but the effect of this choice, when the building is considered the object, is to carry it exactly into the place where it ought to be, far from the steep precipice and dark mountain, to the border of the bending bay and citron-scented cape, where it stands at once conspicuous and in peace. For instance, in *fig. 86.* (Bellaggio, Lago di Como), although the eye falls suddenly from the crags above to the promontory below, yet all the sublime and severe features



of the scene are kept in the distance, and the villa itself is mingled with graceful lines, and embosomed in rich vegetation. The promontory separates the Lake of Lecco from that of Como, properly so called, and is three miles from the opposite shore, which gives room enough for aërial perspective. So also in *fig. 87*.

We shall now consider the form of the villa. It is generally the apex of a series of artificial terraces, which conduct through its gardens to the water. These are formal in their design, but extensive, wide, and majestic in their slope, the steps being generally about $\frac{1}{2}$ ft. high and $4\frac{1}{2}$ ft. wide (sometimes however much deeper). They are generally supported by white wall, strengthened

87



by unfilled arches, the angles being turned by sculptured pedestals, surmounted by statues, or urns. Along the terraces are carried rows, sometimes of cypress, more frequently of orange or lemon trees, with myrtles, sweet bay, and aloes, intermingled, but always with dark and spiry cypresses occurring in groups; and attached to these terraces, or to the villa itself, are series of arched grottoes (seen well in *fig. 86.*), built (or sometimes cut in the rock) for coolness, frequently overhanging the water, kept dark and fresh, and altogether delicious to the feelings. A good instance of these united peculiarities is seen in *fig. 87.* (Villa Somma-Riva, Lago di Como). There are a few slight additions made to the details of the approach, that it may be a good example of general style.

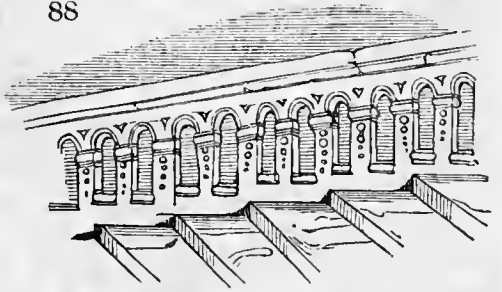
The effect of these approaches is disputable. It is displeasing to many, from its formality; but we are persuaded that it is right, because it is a national style, and therefore has in all probability due connexion with scene and character; and this connexion we shall endeavour to prove.

The frequent occurrence of the arch is always delightful in distant effect, partly on account of its graceful line, partly because the shade it casts is varied in depth, becoming deeper and deeper as the grotto retires, and partly because it gives great apparent elevation to the walls which it supports. The grottoes themselves are agreeable objects seen near, because they give

an impression of coolness to the eye; and they echo all sounds with great melody; small streams are often conducted through them, occasioning slight breezes by their motion. Then the statue and the urn are graceful in their outline, classical in their meaning, and correct in their position, for where could they be more appropriate than here; the one ministering to memory, and the other to mourning. The terraces themselves are dignified in their character (a necessary effect, as we saw above), and even the formal rows of trees are right in this climate, for a peculiar reason. Effect is always to be considered, in Italy, as if the sun were always to shine, for it does nine days out of ten. Now the shadows of foliage regularly disposed, fall with a grace which it is impossible to describe, running up and down across the marble steps, and casting alternate statues into darkness; and chequering the white walls with a "method in their madness," altogether unattainable by loose grouping of trees; and therefore, for the sake of this kind of shade, to which the eye, as well as the feeling, is attracted, the long row of cypresses or orange trees is allowable. But there is a still more important reason for it, of a directly contrary nature to that which its formality would seem to require. In all beautiful designs of exterior descent, a certain regularity is necessary; the lines should be graceful, but they must balance each other, slope answering to slope, statue to statue. Now this mathematical regularity would hurt the eye excessively in the midst of scenes of natural grace, were it executed in bare stone; but, if we make part of the design itself foliage, and put in touches of regular shade, alternating with the stone, whose distances and darkness are as mathematically limited as the rest of the grouping, but whose nature is changeful, and varied in individual forms, we have obtained a link between nature and art, a step of transition, leading the feelings gradually from the beauty of regularity to that of freedom. And this effect would not be obtained, as might at first appear, by intermingling trees of different kinds, at irregular distances, or wherever they chose to grow; for then the design and the foliage would be instantly separated by the eye, the symmetry of the one would be interrupted, the grace of the other lost; the nobility of the design would not be seen, but its formality would be felt; and the wildness of the trees would be injurious, because it would be felt to be out of place. On principles of composition, therefore, the regular disposition of decorative foliage is right, when such foliage is mixed with architecture; but it requires great taste, and long study, to design this disposition properly. Trees of dark leaf and little colour should be invariably used, for they are to be considered, it must be remembered, rather as free touches of shade than as trees. Take, for instance the most simple bit of design, such as the

hollow balustrade, *fig. 88*, and suppose that it is found to look cold or raw, when executed, and to want depth. Then put small pots, with any dark shrub, the darker the better, at fixed places behind them, at the same

88

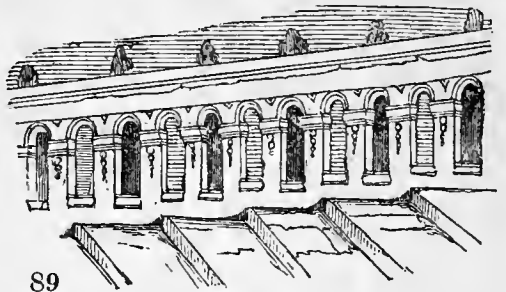


distance as the balustrades, or between every two or three, as shown in *fig. 89.*, and keep them cut down to a certain height, and we have immediate depth and increased ease, with undiminished symmetry. But the

great difficulty is to keep the thing within proper limits, since too much of it will lead to paltriness, as is the case in a slight

degree in *Isola Bella*, on *Lago Maggiore*; and not to let it run into small details: for, be it remembered, that it is only in the majesty of art, in its large and general effects, that this regularity is allowable; nothing but variety should be studied in

89



detail, and therefore there can be no barbarism greater than the lozenge borders and beds of the French garden. The scenery around must be naturally rich, that its variety of line may relieve the slight stiffness of the architecture itself: and the climate must always be considered; for, as we saw, the chief beauty of these flights of steps depends upon the presence of the sun; and, if they are to be in shade half the year, the dark trees will only make them gloomy, the grass will grow between the stones of the steps, black weeds will flicker from the pedestals, damp mosses discolour the statues and urns, and the whole will become one incongruous ruin, one ridiculous decay. Besides, the very dignity of its character, even could it be kept in proper order, would be out of place in any country but Italy. Busts of *Virgil* or *Ariosto* would look astonished in an English snow storm; statues of *Apollo* and *Diana* would be no more divine, where the laurels of the one would be weak, and the crescent of the other would never gleam in pure moonlight. The whole glory of the design consists in its unison with the dignity of the landscape, and with the classical tone of the country. Take it away from its concomitant circumstances, and, instead of conducting the eye to it by a series of lofty and dreamy impressions, bring it through green lanes, or over copse-covered crags, as would be the case in England, and the whole system becomes utterly and absolutely absurd, ugly in outline, worse than useless in application, unmeaning in design, and incongruous in association.

It seems, then, that in the approach to the Italian villa, we have discovered great nationality and great beauty, which was more than we could have expected, but a beauty utterly untransferable from its own settled habitation. In our next paper we shall proceed to the building itself, which will not detain us long, as it is generally simple in its design, and take a general view of villa architecture over Italy.

We have bestowed considerable attention on this style of Garden Architecture, because it has been much abused by persons of high authority, and general good taste, who forgot, in their love of grace and ideal beauty, the connexion with surrounding circumstances so manifest even in its formality. Eustace, we think, is one of these ; and, although it is an error of a kind he is perpetually committing, he is so far right, that this mannerism is frequently carried into excess even in its own peculiar domain, then becoming disagreeable, and is always a dangerous style in inexperienced hands. We think, however, paradoxical as the opinion may appear, that every one who is a true lover of Nature, and has been bred in her wild school, will be an admirer of this symmetrical designing, in its place ; and will feel, as often as he contemplates it, that the united effect of the wide and noble steps, with the pure water dashing over them like heated crystal, the long shadows of the cypress groves, the golden leaves and glorious light of blossom of the glancing aloes, the pale statues gleaming along the heights in their everlasting death in life, their motionless brows looking down for ever on the loveliness in which their beings once dwelt, marble forms of more than mortal grace lightening along the green arcades, amidst dark cool grottoes, full of the voice of dashing waters, and of the breath of myrtle blossoms, with the blue of the deep lake and the distant precipice mingling at every opening with the eternal snows glowing in their noontide silence, is one not unworthy of Italy's most noble remembrances.

ART. II. *Hints on Construction: addressed to Architectural Students.*
By GEORGE GODWIN, Jun., F.S.A. and M.I.A.

NO. 1. INTRODUCTION.

AN interest in architectural productions, leading to a knowledge of just principles in regard to visible beauty, and tending unquestionably to advance the character of architecture as a fine art, has been lately created in the public mind by the concurrence of several causes, to a degree perhaps unprecedented in England : and we are disposed to believe that it needs only a proper amount of zeal and activity on the part of its professors, at this moment, to obtain for themselves a position in public

opinion which shall insure to them hereafter the unfettered exercise of their talents when called into operation, and to enable them to remove entirely the unfavourable impression in regard to English architectural taste, which has long existed in the minds of our various Continental neighbours, — perhaps not without reason.

Under this view, it behoves every professor, as we think, who has the interest of his noble and elevating pursuit at heart, to be up and stirring; and, that their efforts may be seconded, we are induced by strong feeling on the subject, modestly, but earnestly, to call upon the English students of architecture to apply themselves anxiously and unceasingly to the study of it, in all its bearings; so that opprobrium may not hereafter return to us on this head, but that England may become as super-eminent among nations for her school of architects, as she now is for commercial enterprize and manufacturing skill. They should lose no opportunity of storing their note-book, and through that their memory, with beautiful forms; of cultivating taste and exercising their judgment. They should travel in foreign countries, examining remains whose character for beauty is established, and investigating the principles which guided alike the ancients and the architects of the middle ages, both in the arrangement of their edifices, and the choice of the decorations and ornaments employed, with a view to the formation afterwards of new and beautiful combinations, in buildings adapted to their required purposes, to the habits of their occupants, and the climate of the country in which they are to be erected.

To effect this end, namely, the creation of visible beauty (to which *fitness* is essentially necessary), is the highest office of the architect, and requires the highest order of mind, as well as the most sedulous study. This is architecture as an art; but before this point can be reached, before the powers of the mind can be rendered available to this end, architecture as a science, if we may so speak, must be understood; under which head, although requiring a less order of intellect, its ramifications are so extensive, and the points to be considered are so numerous and of such exceeding importance, that unremitting application almost of a life's duration is necessary for its mastery.

It has been often said that a knowledge of construction is as necessary to the architect as that of anatomy to the sculptor; but we would go even farther than that, and say it is as necessary to him as the latter is to the surgeon, insomuch as it is by means of that alone that he can usefully operate. Without it, although an artist may possess the greatest powers of invention, and be able to produce forms of surprising beauty *per se*, he cannot materially assist in effecting the chief purpose of architecture; namely, the comfort and happiness of individuals, and the advancement of

society. Strange to say, however, a knowledge of construction, the study of which, if what we have said be true, forms a most important portion of an architect's education, has apparently been deemed immaterial ; and, in consequence, so much neglected as to have led to numberless serious results, and to have made the idea of an architect's design and estimate of the expense synonymous, in the minds of some, with that of a falsely stated or unwise scheme.

The scientific and influential body of men known as civil engineers owes its establishment, perhaps, to the inattention shown by architects to a knowledge of construction ; it may, in fact, be termed that section of the profession which consists of those who, neglecting in a degree the production of beauty, have studied more immediately that which the others have neglected. Now so far as *they* are concerned, this division of labour, by means of which greater excellence is attained, is advantageous to society, inasmuch as constructive skill and scientific knowledge may be of the greatest value without fine taste or acquaintance with architecture as an art : but in regard to the architect it is different ; for, without a knowledge of construction, as we have said already, he cannot proceed a single step with any advantage to his fellows.

In the face of this, however, we have known many young men of talent to leave offices of first-rate practice wherein they had been educated, not merely profoundly ignorant of all that relates to construction (even of the workman's nomenclature, and therefore certain not to command any attention from workmen) ; not merely unable to point out how they would have their ideas carried into execution, and to discover if the work were properly or improperly performed ; not merely unable to arrange their plans with a view to the relative expense of certain methods and materials, so that the greatest effect might be produced at the least cost ; but so thoroughly imbued with the notion that such mechanical portions of their professional duties were unworthy of their attention, that they were not likely to attempt to gain any acquaintance with them, until they had been slowly taught their error by experience. The Council of the Institute of British Architects have done much to induce more immediate attention to construction on the part of students, and have shown the importance which they themselves attach to a knowledge of it, by the number of papers relating thereto which have been read, and the lectures on specific portions of it which have been delivered. It must, however, be urged again and again, before we can hope that good results will be strikingly apparent ; and, feeling that every attempt, however humble, to direct the attention of the student to this department of his profession will necessarily effect good, in a greater or

less degree in proportion as the effort may be well directed, we propose to issue, with this end in view, a series of disjointed remarks under various heads (such as, Foundations; Bricks, and Brickwork; Mortar and Cements; Carpentry; Iron, Zinc, and Lead; Internal Finishing, &c., &c.), embodying information concerning materials generally used, the modes of executing certain works, points to be especially attended to by the architect during his superintendence of an ordinary dwelling-house, and such others matters of detail as we may deem likely to be of value to the tyro.

These papers will put forward no pretensions to be considered a complete treatise on construction, nor aim at any thing further than a small degree of usefulness; so that, if our endeavours should fail to be successful, they will not at all events subject us to be termed presumptuous. We commence with some memoranda regarding the preparation of

FOUNDATIONS.

Although we do not very often hear of the entire destruction of a building through inattention to the nature of the soil on which it stands, or want of judgment in the means employed to remedy the defects in it, or see numerous buildings emulating the towers at Pisa and Bologna, there are few rows of newly built houses whose "compo'd" fronts will not prove, by diagonal cracks over the window openings (usually caused by the sinking down of the party walls with their heavy load of chimneys), that a reiteration of the necessity of carefully examining the ground on which either a public building or a private dwelling is to be erected, may still be serviceable. All "newly made ground," to use a technical expression, should be removed; clayey soil, even if apparently compact, should be viewed with distrust and treated with precaution, being likely to shrink and crack. Dry gravelly soils sometimes contain vacuities which collapse when loaded with a certain weight: and even a rock will not always prove a good foundation. Indeed, under certain circumstances, rock affords the least trustworthy foundation that can be quoted. If, for example, its bed is not horizontal but oblique, as is often the case, there will always be a probability, especially if excavations are made near it, that portions subjected to any pressure, will *slip*, and the building, if one be upon it, be destroyed. At St. Mary's Cemetery in Liverpool, the chapel, erected on a mass of the new red sandstone (on one side of which there is a deep cutting), is in this predicament. Rain water, collected in the fissures, and expanded by frost, has caused the rock to split obliquely, which is the direction of its bed, in several places; and, although the surface of the rock has been pared down so as to prevent the lodgement of water as far as is possible, and

other precautionary measures adopted, it is to be feared that the injury will extend to the building.

Previously, then, to the commencement of an edifice, the ground should be tried by ramming, and if this examination be unsatisfactory, by boring. Digging deeper into the earth does not always secure a better bottom, indeed we should at times commit an error by so doing; thus St. Paul's Cathedral stands tolerably securely on a stratum of pot-earth or clay, under which, for forty feet in depth, is said to be dry sand that will run through the fingers; and part of Greenwich Hospital is erected upon a thin layer of gravel immediately above a similar quicksand. In either case, had this stratum been removed, which now serves as the one broad footing on which each building stands, a considerable difficulty would have been created.

If was formerly the custom when the natural soil was bad to a greater depth than could be digged down to, and the building was not of sufficient importance to admit the expense of piling, to excavate to a certain distance, and then, having attained a perfect level (which in all cases is essentially necessary), to form a platform, by means of logs of wood, or sleepers, 5 or 6 inches square, and placed 3 or 4 feet asunder in the direction of the thickness of the wall, on which was laid strong planking in the opposite direction, securely spiked down, and on this the walls were built. The foundation of many houses in Westminster, the soil of which is, for the most part, of a marshy nature, was prepared in that way, and we have seen *fir* sleepers, some centuries old, taken up in that neighbourhood, which having been exposed to no alternations of temperature, or of dampness and dryness, but constantly embedded in the boggy earth, were exceedingly sound. Except under extraordinary circumstances, however, all woods are subject to decay, and destructible by worms, and their employment therefore should be avoided in foundations, where restoration is almost impossible, and stability of vital importance. Not many years ago, part of a large building at Amsterdam, which had formerly belonged to the old Dutch East India Company, fell into the river during the night, without giving any warning, in consequence of the gradual and unobservable decay of the piles on which it stood in common with most buildings there.

When the soil on the site of a proposed edifice was unequally bad, portions were excavated, and piers of masonry or of brickwork, as the case might be, were built up from the solid ground, and connected by arches on which the walls were built. In as much, however, as a building so raised was put upon a series of props or legs, some of which would probably settle down or penetrate the earth more than others, and in most cases *did* do so, this plan may not be deemed infallible.

At the present moment, the mode of preparing foundations most generally adopted depends on the concreting power of lime, by means of which a solid rock of any size or substance, may be formed for the building to stand on; and this method, on account of its excellence, will soon, probably, render all others obsolete, except as accessories.

By the use of "Concrete," we may almost prevent the possibility of failure, so far as regards foundation, and that too with a comparatively trifling increase of expense. For our own part, we would not build a common "eight-room'd" house, if circumstances allowed it, without a bed of concrete in trenches under all the walls. In ordinary cases, if this were 9 in. wider on each side than the footings, 12 in. in thickness, and put in with proper care, the probability of settlements would be entirely removed. Concrete serves, too, to prevent dampness in the walls, and as its presence generally lessens the quantity of brickwork required, only a small addition to the expense would be caused by its introduction. In some situations, indeed, as it may be put in on ground on which brickwork could not safely be commenced, and as it is of itself cheaper than brickwork, a considerable saving may be effected by its use.

The subject of Concrete, the various modes of preparation, its advantages and peculiarities, are somewhat fully treated of in the first volume of the *Transactions of the Institute of British Architects*, to which we venture to refer our readers; but as it is a most important material in construction, and its application of every-day occurrence, we shall briefly describe the best mode of compounding it, and mention some points to be attended to in its use.

ART. III. *Remarks on the Construction of Waterloo Bridge and London Bridge.* By an ARCHITECT. Communicated by T. B. W.

IN these days of railroads and bridge-building, when every architect is more or less an engineer as well as an artist, and when every one studying the art ought not only to acquire a knowledge of the principles of taste, but be familiar with all the principal problems of practical mathematics, the following document, as it appears to me, well deserves a place in your pages. It was written by an architect who is now high in his profession; and, though I give you his name, yet I should not wish you to publish it at present. The document was in circulation ten or twelve years ago, at which time I was fortunate enough to procure a copy of it.

PROPOSED new London Bridge.—The design of the late John Rennie, Esq., has been recommended by the committee. This is, in principle of construction, similar to Waterloo Bridge,

which has been frequently referred to as the ground and authority for the intended mode of proceeding.

Waterloo Bridge Construction is open to the following Objections. First, The mode of founding in cofferdams and piling to receive the piers. The natural bed of the river is a gravel, and a blue clay under. This is a good and sufficient foundation; and is injured, not mended, by piling. At Waterloo Bridge, by driving the piles, the bed was wholly disturbed and raised into a sort of puff paste, whereby the competency of the natural bed was destroyed, and the dependence is wholly on the piles, whose feet stand on a stratum no better, except that being deeper it has been less disturbed by the piling. The insufficiency of such foundation was exemplified at Orleans Bridge, in France, where the body of one of the piers went down with its load nineteen inches, and the cutwaters were entirely broken off.

Second, The mode of connecting the springing of the arch with the cutwaters of the piers has a discrepancy very offensive to an eye at all conversant with the principles of construction. There is no obvious workmanlike mode of constructing them as there exhibited. The arch stones appear at the springing to be reduced to a point; and although we may guess that they are continued in some secret way behind the façade of the pier, yet we are satisfied it must be a great drawback on the solidity of the one or the other.

Third, The mode of projecting the piers beyond the face of the bridge (and which, in the late Mr. Rennie's model, is excessive) is useless for stability, possibly dangerous; and certainly an unnecessary expenditure. When the piers of Orleans Bridge went down, it broke away from the cutwaters, notwithstanding the grating of whole timbers connecting them; and left the cutwaters at their original level. At Waterloo Bridge the arches are settling away from the cutwaters, and the bed of the river having been loosened and raised by pile-driving, the settlement will continue to increase probably for some years, before it becomes consolidated; and time only can determine whether the sand and tenacity of the material will be sufficient to resist a more dangerous separation. The uselessness of the projecting cutwaters for stability is, therefore, demonstrated. For the purpose of dividing the stream, they are far short of what the case demands and what science can effect.

Fourth. Regarding the trussed centre. A dissected model of one of the arches of the design of the late Mr. Rennie was exhibited for a day or two on the table of the committee room, with a model of the trussed centre under it. In the presence of several members, it was pointed out to be a copy in principle of the Blackfriars and Waterloo centres; that it was defective, in as much as it contained no principle to resist change of form

when partially loaded, as is the case in the progressive building of an arch; that it had, consequently, failed at Blackfriars and at Waterloo Bridges. At both those places the defect was helped by loading the crown of the centre previously to building the haunch of the arch. But this is a clumsy and unscientific way of overcoming the difficulty, and does not fully answer the purpose. The centre still undergoes continual change of form by the progressive loading. The arch, of course, participates in this change of form; and its stability is thereby impaired, if not endangered. The form of the arches at Waterloo Bridge is evidently much crippled, and at Blackfriars' Bridge considerable spaults took place. At Waterloo Bridge, the excellence of the stone was sufficient to resist spauling; and the injury is there limited to the unsightly distortion of form.

Upon the whole, to those who are conversant with the history of bridge-building, and with the best examples, this design of the late Mr. Rennie is, in art and science, a retrograde movement; and, if it should be carried into effect, will be a disgrace, instead of an honour, to the city.

Regulated by these principles, I formed the design which I delivered to the committee; but the committee was pleased to stop me in the explanation thereof; alleging that it was unnecessary for me to repeat anything that had been committed to writing in my papers, which were already before them, as those papers would be printed, and a copy given to every member. There is in them, as I conceive, matter sufficient to deter the adoption or repetition of the principles of Waterloo Bridge construction; but I am fearful the elucidation of these my principles has not been read.

If it were a question of taste only, such as to decide an elevation, or the decoration of it, I should remain silent; but, as the question is upon principles of construction, implicating stability and security, which are capable of being discussed with logical precision; and, correct conclusions being deduced therefrom, I think it right to press their consideration.

In my design there are the following improvements on the usual mode:—

The arches virtually spring from the bed of the river, by which there is no lateral pressure beyond the pier, and every arch is independent of its neighbour. And I am ready to produce a responsible person, who will undertake to build the middle arch first and alone, and deposit ample security to remove it in case it does not incontrovertibly establish the principle.

From the mode of construction, the apparent springing may be made where most desired, which should be not lower than high-water mark, but rather at the height of the highest floods; thus the greatest water-way is obtained where it is most wanted.

The shape of the pier presents the only form which divides the stream with greatest facility, and allows it to pass with the least danger of undermining the pier.

The shape is, also, the best for receiving and supporting the weight of the arches, and for spreading that weight in the most ample manner on the bed of the river. In both arch and pier, the line of pressure is ascertained by a simple mechanical process; and the joint is, in all cases, cut at right angles to the line of pressure; thus the whole of the contiguous surfaces of the stones of arch and pier bear on each other; whereas, in the usual construction, nearly all of them perch on one edge or the other.

The advantages of this invention are, that the construction is rendered more easy, the stability more certain, the convenience greater, and the expense much less.

As regards the trussed centre, I have produced a model of one which has been used, and was fully proved to resist all change of form during the building of the arch.

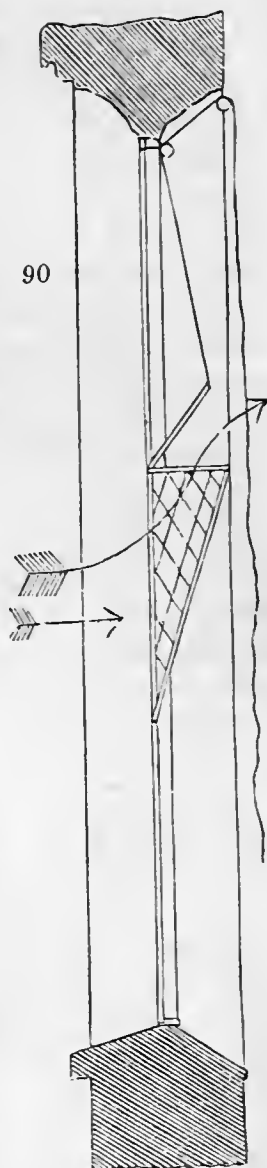
The amount of my estimate is 280,000*l.*; and I have responsible builders ready to guarantee, by the most ample security, the complete execution at that amount.

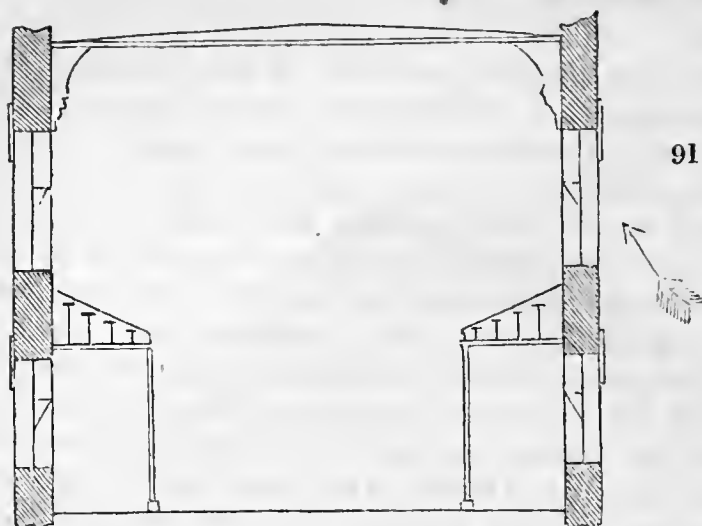
ART. IV. *On the Ventilation of large Buildings by the Intervention of Openings in the Windows.* By R. MALLET.

WHEN in Liverpool, last September, at the meetings of the British Association, I went once to St. Jude's church. This edifice, which is in a sort of Gothic style, presents, when filled with people, a very imposing interior; partly from its magnitude intrinsically, but much more from this property not being, as it is so often, frittered away by innumerable divisions and subdivisions of parts, in the arrangement of ornaments on walls and ceilings. The ceilings are in this church particularly good, being simply divided across by the tie-beams (or representations of them) of the roof principals, which are moulded in a very bold style, and terminate at the walls in rich open Gothic brackets. The under line of these mouldings passes level and straight across, while the ceiling forms a large angle at the centre, probably of about 160° ; thus giving an aspect of great strength and solidity. But to the point. There are two rows of windows at either side, one over and one under the galleries; and each window has a considerable portion of the sash cut out, and inclined inwards, and so fixed; with glazed sides and an open top, furnished with a glazed lid to open and shut by a cord. *Fig. 90.* is a section of one of these, which represents them all, and is sufficiently plain without reference. The doors are judiciously contrived to prevent the currents of air which are often so distressing in

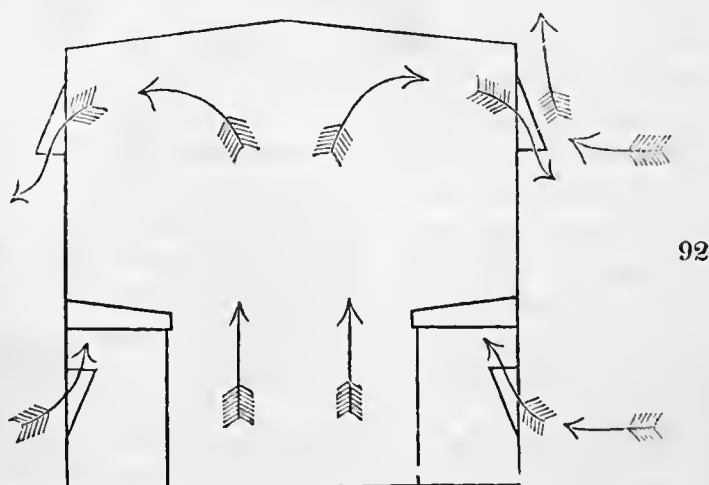
churches ; and hence ventilation may be considered as confined to these openings in the windows. Now, while the church is filling, and for, perhaps, the first half hour or so of service, nothing can be better than the ventilation : a delightful *aura* spreads through every part of the building, and feels fresh and breezy ; but as the church heats this rapidly declines ; and in about an hour, on putting my hand to one of the ventilators, where there had been a strong current in before, I could find none perceptible. This struck me as curious ; and, on a little subsequent consideration, I believe I have seen the cause ; and, as a great number of churches and other buildings are ventilated in this way, I have deemed it possibly worthy of notice in your Magazine.

Referring to *fig. 91.*, and supposing the wind to blow against one flank of the church, either direct or diagonally, as shown by the arrow, it is obvious that, pressing against the inclined planes of the ventilators, a portion of it will be driven upwards, as shown in *fig. 90.*, and into the church, and will tend to expel a certain portion of air, by a retrograde motion from the opposite side. The opposing forces that the air meets in entering are the inertia of the body of air in the building, and the force necessary to expel part of it from the leeward windows ; but, besides this, as the air in the church becomes heated and ascends, it has a tendency to lodge above the upper row of windows, and, from the commencement of the process, gives a greater freedom of entrance to the fresh air below than above ; but, as soon as the hot air above has increased so as to have reached the level, or below the top, of the upper row of ventilators, the whole or a part of the current through them becomes stopped, depending on the temperature of the upper region ; because this air to be displaced by fresh air, requires to be depressed into air colder, and hence denser, than itself, owing to the structure and position of the ventilators ; so that, in fact, at a certain period, dependent on the circumstances of external and internal cooling and heating agencies, the heated air becomes itself a valve to stop out the fresh air. Now the remedy for this is very plain ; and consists merely in inverting one set or range of ventilators, as in *fig. 92.* where I have represented a section of the church merely by





lines. Here the upper ventilators are inverted; so that a lateral external current, instead of, as before, being urged by the inclined



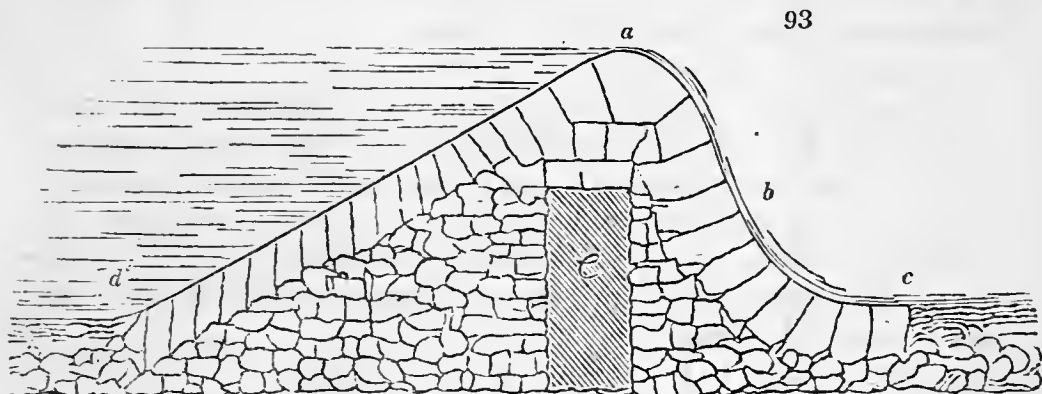
plane against the issuing hot air, is deflected upwards by it outside the building; while the slope of the ventilator gives at both sides free egress to the heated air, at the same time that the position of the lower ventilators is the best possible for freely admitting the external atmosphere. This is shown in the figure by the directions of the arrows, together with the ascending currents of heated air. The protection from rain is equally good in either case; and this latter modification would appear to afford a very good and efficient system of church ventilation.

It is very likely that all this, and much more, may have occurred on this subject to you and many of your correspondents, it was, however, new to me.

94. *Capel Street, Dublin, Feb. 10. 1838.*

ART. V. *On the most proper sectional Form to be given to Weirs or River Dams.* By ROBERT MALLET.

THE section of weirs or dams, when of masonry, appears, in most instances, to be pretty nearly a rule of thumb business, with the exception of some examples by Mr. Telford. The model of an earth embankment appears to have been adopted for stone ones, with but little care either as to the best position for the stones of the masonry, for maximum strength, or as to the outline that would give the easiest descent for the falling fluid, and, by consequence, the least wear and tear to the structure. Not to encumber your pages with a parade of analysis, I shall just state the results I have arrived at, and leave your mathematical readers, who will at once see what I would be at, to judge for themselves; while the practical man can discern from the figure whether the positions and forms I have assigned to the stones of the masonry are the most suitable. Supposing, then, the plan of the weir to be an arch pointing up the stream: I conceive the line of section, from *d* to *a* in *fig. 93.*, should either be



a right line (or, possibly, a parabolic segment, presenting a convex inclined surface to the water in very deep streams). The line from *a* to *b*, I consider, should be a parabola, to which the water-level should be a tangent; because this curve gives the easiest change from direct to curvilinear motion, and hence with the least expenditure of force. Lastly, I think the line from *b* to *c* should be a cycloid, as being the curve of quickest descent; so that the combination of these two curves will fulfil the condition of giving the easiest change of motion to the water, from a rectilinear to a curved, and back again to a rectilinear, possible, and hence the minimum wear and tear to the structure; while they possess the coordinate property of a judicious form to resist the hydrostatic pressure.

I believe a weir thus formed would cause the fluid to descend in every part in an unbroken sheet, and produce little or no ripple below it. I also think the principles of the form proposed are now for the first time stated.

For weirs subject to waves, certain modifications are required; but the investigation of these is plainly out of place in this Magazine.

94. *Capel Street, Dublin, Feb. 10. 1838.*

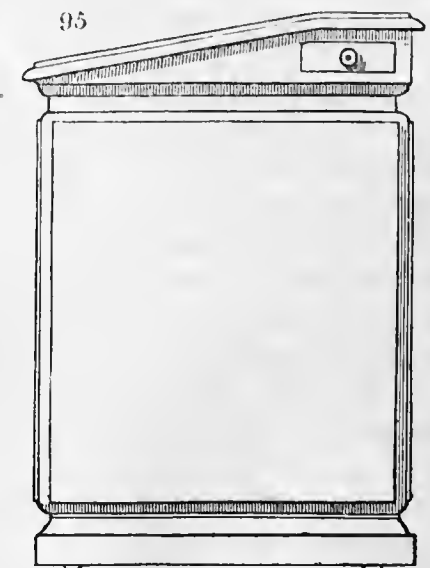
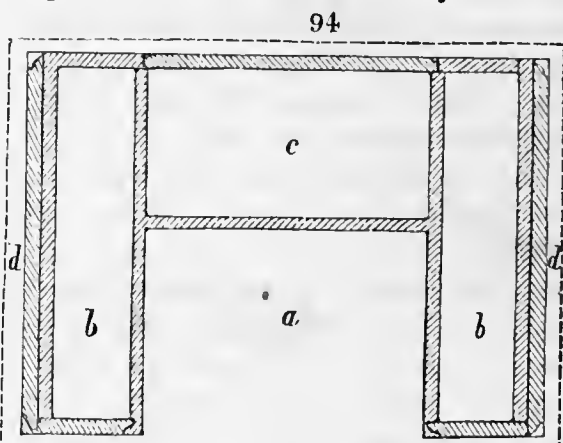
ART. VI. *An Architect's Desk.* By E. B. LAMB, F.R.I.B.A.

I HAVE recently had a new desk made; and, as it comprises some things which, perhaps, are novel, I send you five sketches of it (*figs. 94.*

to 98.), together with some of the reasons which led me to adopt this design; though, as a production of my own, I may show a greater degree of partiality for it than it merits.

I found that the most convenient drawing-table or desk, for my own use, was one that would take little room, and, at the same time, could be extended at pleasure, so as to give me an opportunity of having a number of drawings or books of reference always within my reach; and, that I might not be frozen in inclement weather, by being obliged to be seated at a fixed desk, or, at least, one that could be moved only with difficulty, the one I required should move with the greatest facility; so that, in whatever situation I might choose to place myself in my study, little more than the mere will was necessary to obtain it.

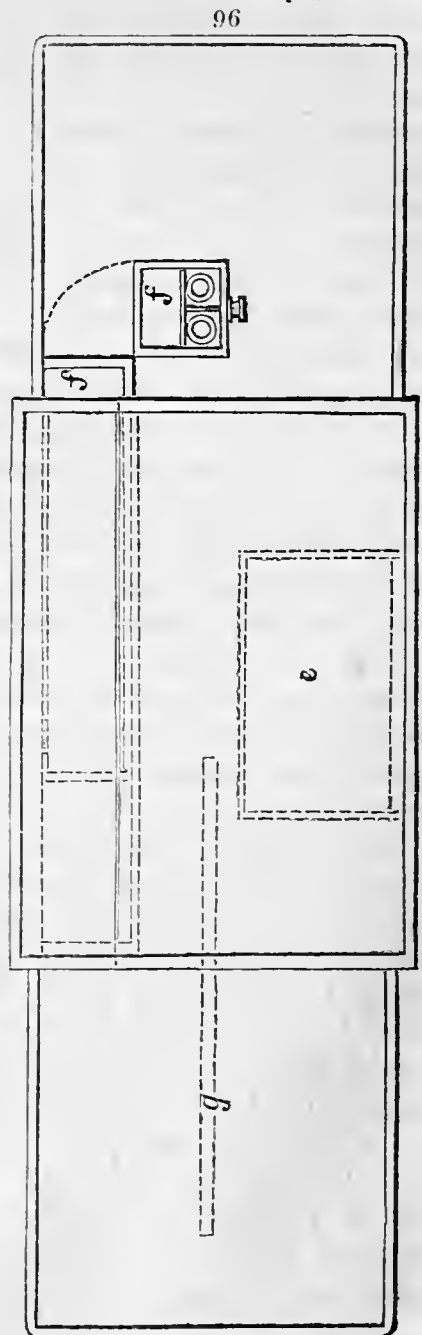
A flat table I considered objectionable to draw upon, for obvious reasons; and a movable support for a drawing-board I have always found to be inconvenient; therefore, an inclined desk was determined upon, as, on removing the drawing-board, a writing-desk is obtained. The means of extending the top by flaps (*figs. 96.* and 97.) is the most simple and expeditious I could devise. I found it desirable to keep the centre part higher than the sides, in order that, when the centre is occupied by a drawing-board, which may extend somewhat over the flaps, they being lower, drawing-



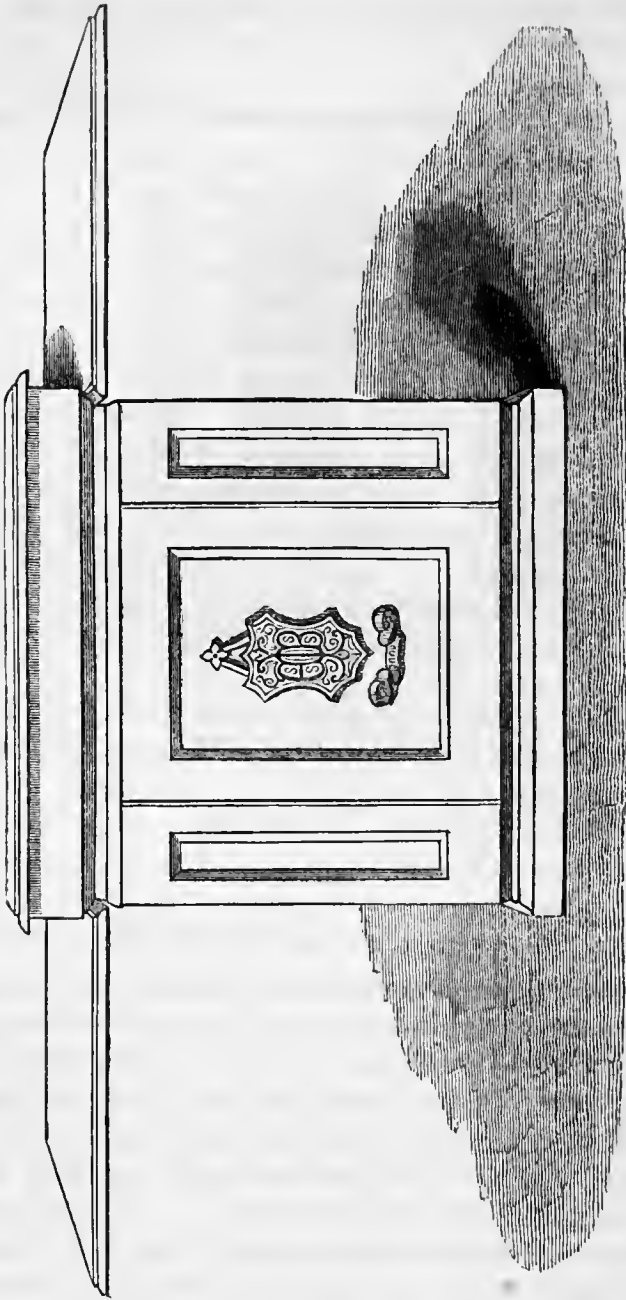
boards may be placed upon them when necessary, without being in the way of the free use of the T square on the centre board; or books and papers may be laid here open, without the liability of their being injured or pushed off by any movement required by the centre board. In *fig. 94.* will be seen the general plan of the lower part; in which *a* is the space for the knees in front, 18 in. wide, 13 in. deep, and 25 in. high to the drawer rail: *b b* are side closets, with one shelf in each; the dotted curve lines show the way these closets open: *c* is a closet at the back, with one shelf for books, papers, &c.; the closets in front being used for rolled up drawings, and other papers in present use: *d d*, the side-flaps, when down. It will be seen from this plan that the mouldings at the angles are all of the same form, and return round the sides; thus making a border to the flaps the same as the one to the desk in the centre. The sections of these mouldings are necessarily quadrants of circles, or what workmen call quarter rounds. By the perspective sketch (*fig. 98.*) the effect of this arrangement will be seen.

Fig. 96. is the plan of the top, with both flaps up; the whole extent of which, when thus opened, is 6 ft. 9 in.; the top of the desk alone is 2 ft. 11 in. wide, and the depth 2 ft. 1 in.; the flaps are 2 ft. 1 in. by 1 ft. 11 in. The dotted lines at *e* in this figure show a small drawer, over the recess for the knees; *f* is a long drawer for pens, pencils, wax, &c. This drawer is divided in the manner shown on the sketch; and one part, which turns nearer the hand, is supplied with ink-stands; the dotted lines in the upper part show the situation this drawer occupies; and the dotted lines at *g* show the situation of the bearers of the flaps, which bearers draw out from under the desk.

Fig. 95. is an elevation of one of the sides. The back, with the flaps up, is shown in *fig. 97.* *Fig. 98.* is a perspective sketch, showing the appearance when the flaps are down.

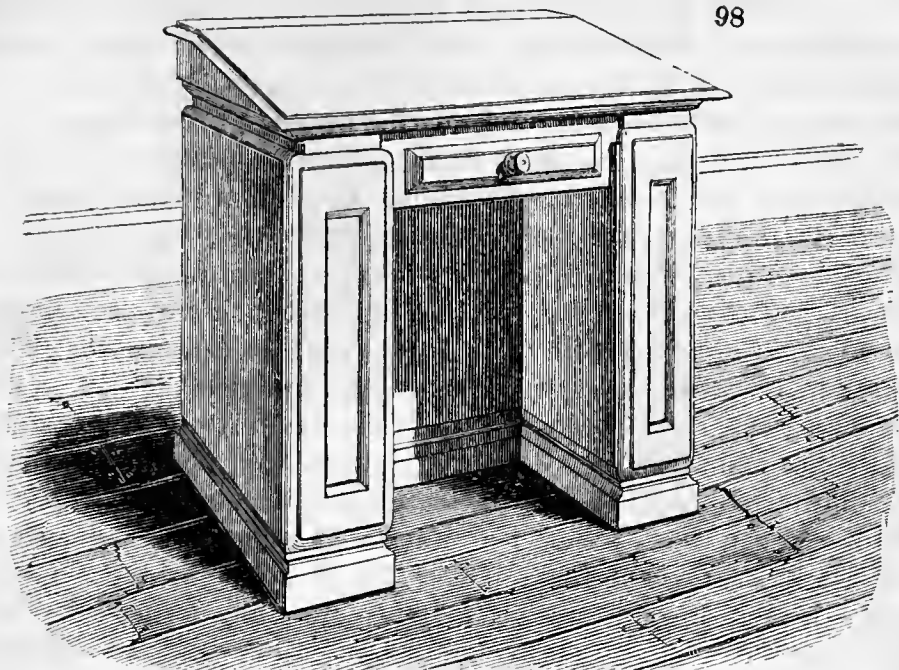


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The drawer, the front closets, and the desk are, by a very simple contrivance, fastened at the same time; and only one lock is required to be used. The closet at the back has a separate lock; but the same means of securing this at once could be applied, if it should be required.

This design might be useful for a small library, the centre top being horizontal; or as an office or counting-house desk I think it would be found convenient. It would then, perhaps, be necessary to cover the centre top with leather, in the usual way of office tables; but, for an architect's desk, a leather top would be liable to be scratched and defaced by drawing-boards. It might display a great deal of ornament, or be constructed with



ornamental woods. The one I have had made is of wainscot; my object being to obtain convenience combined with neatness and simplicity.

London, Henrietta Street, Feb. 1838.

ART. VII. *The Royal Exchange Competition.* By CANDIDUS.

ALTHOUGH nothing has been yet definitively settled (at least, not announced to the public), there is some reason to suppose that there will be a public competition for the Royal Exchange; and, should such really prove the case, it is to be hoped that both the public and the profession will strenuously demand, not only an exhibition of all the designs, but that it shall take place *before* the choice is actually made. I made some remarks to this effect, which were inserted in the Number for February; but, as I do not find they have been seconded by any of your other correspondents, either enforced by the expression of a similar wish, or noticed for a contrary purpose, I beg leave to revert to the subject, and to state more pointedly what I conceive to be valid reasons for adopting such mode of proceeding.

Even the *after* exhibition of the designs for the Houses of Parliament was a great step towards a better system. It did a great deal of good, if it was only by calling public attention to architecture, and by rendering, for the moment at least, the subject one of general interest. There can be no doubt that this exhibition caused architecture to be the topic of more conversation and discussion during those two or three months, than had been bestowed upon it during the ten years previous. Yet

that good will have been but temporary, if the occasion that produced it is to be a solitary one. Instead of permitting it to remain such, it rather behoves us to improve upon what was then done, by affording the public the opportunity of expressing their opinions before the final decision be pronounced. A competition so conducted would really deserve to be styled an *open* one; but, if its openness consists in nothing more than that any one is at liberty to send in a design, it can hardly deserve such an epithet; there being nothing to prevent *secrecy* afterwards, and to guarantee to the competitors that no undue arts or influence will be exercised in favour of any individual.

It will, perhaps, be said that the very circumstance of inviting architects to competition, whether an unlimited or limited number, ought to preclude the suspicion of all unfairness; since the only object can be to obtain the best, or what is considered to be the best, or, if even not the best, the most eligible, design offered. Be it so; but then, I ask, why should there be any concealment? why should even an opportunity be afforded to suspect, or make others suspect, any sort of unfairness; or to say, as has been done ere now, that advantage was taken of something in another design? I have heard it argued, that an exhibition previous to decision would not only imply mistrust in the competency of those appointed to be judges, but would tend rather to embarrass than facilitate their choice, in consequence of the variety of conflicting opinions they would hear expressed beforehand. I do not at all see this: in the first place, so far from implying that they were inadequate to their task, and, possessing no judgment of their own, required to be directed, if not dictated to, by that of the public, it would afford presumption that the parties accepting such office were individuals who felt confident that they should be able to justify their decision, even though it might be impugned by many. In the next place, it is to be presumed that, instead of being at all perplexed or embarrassed by the various comments of the public, they would have no difficulty in distinguishing the reasonings of sound criticism from futile censure or praise. To a certain extent, indeed, they would and ought to be guided by the opinions so elicited; that is, they would weigh the matter more maturely than they otherwise would do, and have their attention directed to what might else escape it; yet this is a very different thing from being swayed by popular opinion, without venturing to exercise any opinion of their own.

It may further be objected, that an opportunity would thus be afforded for much caballing and intriguing, as the parties most interested in the decision would endeavour, either directly or indirectly, to recommend their own designs by favourable comments on them, inserted in the public papers and journals; and

here, I conceive, lies the objection, — all, in fact, that can be objected, against the scheme of a previous exhibition. Nevertheless, I do not consider it an insuperable one; partly for the reason above assigned, namely, that the judges could hardly be swayed to adopt a design undeserving preference; and also because intriguing of the sort on one side would be neutralised by counter-intriguing, perhaps I should say counter-statements, on the other. Knowing that they were liable to be instantly met by some adversary, people would be rather cautious or shy of attempting to advocate that whose title to preference they could not, in some way or other, make tolerably good; for it is hardly to be imagined that those who entertained a different opinion would choose to remain silent on so important an occasion. Some of the discussion thus provoked might be interested and angry: it would elicit much bad criticism as well as good: still it would be discussion; and that is, at all events, better than indifference and apathy. People would begin to find out the necessity of studying, at least of making themselves tolerably acquainted with, the subject, lest they should commit themselves, and betray their ignorance.

The first experiment of the kind has proved that the affording the public an opportunity of examining and comparing all the designs sent in on that occasion drew an unusual degree of attention to the subject of architecture, and was the means of rendering it one of some interest even to those who were before quite indifferent to it. Such having been the case when, the prizes having been previously adjudged, all that was afforded to the public was the opportunity of satisfying their curiosity, and ascertaining how far the choice itself appeared to have been a satisfactory one, it is no more than reasonable to presume that they would be incited to a far more diligent examination, and by other motives than curiosity alone, when they felt themselves in some measure appealed to, and were aware that the proper expression of their opinions would meet with due consideration. The competitors themselves, on the other hand, would be spurred on by a double stimulus; foreseeing that, whether they succeeded or failed in the main point, the merits of their drawings would be warmly canvassed, and their interest, perhaps, obstinately espoused, by those who, having once declared in their favour, would not retract their opinion, if they could possibly defend it.

By no means do I pretend to affirm that such a mode of competition would not be violently objected to by many professional men; and that for reasons easier to be discerned than openly defended. The question, however, is not what mode is best calculated to promote the interests of particular individuals, and prove agreeable to them, but what is most likely to

excite emulation, and to advance the art itself. At all events, I say, *Fac periculum*, Make the experiment: should it prove a failure, should none of the advantages proposed by it have been attained, we can then very properly revert to the system hitherto followed, under the conviction, then forced upon us, that, objectionable as is it in itself, it is, nevertheless, the best.

REVIEWS.

ART. I. *An Address on the Subject of Education, as connected with Design in every Department of British Manufacture; together with Hints on the Education of the Poor generally.* By Geo. R. Lewis, Author of "Anato-Chirurgical Views," &c. Pamph. 8vo. 1838.

MR. LEWIS is well known as an eminent artist, who has published a series of anatomical plates, displaying great knowledge of the subject and artistical skill; and also a series of etchings, portraying the physiology, manners, and character of the people of France and Germany. In the work before us, he proves himself to be a man of enlightened mind and benevolent heart, and, at the same time, highly patriotic in his views. We should not feel ourselves justified in giving a detailed analysis of Mr. Lewis's "Address" in a magazine devoted to architecture: nevertheless, as the improvement of architecture is one object of Mr. Lewis's plan, we consider it our duty strongly to recommend this pamphlet to all who take an interest in the subject, and to give one or two extracts, to show the essence of the author's ideas on the subject.

With respect to the education of the poor, Mr. Lewis observes—

"Let a National System of Education be fully gone into by the Legislature, and based entirely upon a thorough knowledge of human nature, and we shall then have no genius wasted, no faculty lost. All will then be made the most of, and turned to good account. Soon, then, should we see this nation rise in the greatest of all her resources, manufactures, which it is at present so much in need of. Our manufactures have long suffered through the arts being at such an immeasurable distance from them. The designs which constitute the ornamental part of our goods being imitative instead of inventive, keep us in the background, and lower us into the degraded state of servile imitators which no nation in the scale of intellect should ever allow itself to be.

"To raise ourselves from this state of degradation, we should establish schools of art in every city and manufacturing town throughout the United Kingdom, that the rising generation may no longer be excluded from that source out of which so much valuable knowledge springs. Such schools of art should be formed for the purpose of opening the wide field of nature, that the true foundation may be laid in the minds of our youth in early age; that the only materials for forming new arrangements and combinations may, as soon as received, be permanently held, and thus enable them to lay up a never-ending store of information; that design, original thinking, and invention may have a perpetual supply of that food which will at all times keep it in a high state of vigour and activity.

“To effect this, the groundwork must be the construction of those geometrical problems that are necessary to the comprehension of perspective, the only foundation for accurate delineation of all forms, whether artificial or natural.

“There is one point, above all, I consider to be of the greatest consequence in the instruction of youth as regards design; that is, the greatest care should be taken by the instructors not to enforce their notions (or any others’) of design in the demonstrations to the students, as that would have a tendency to destroy the peculiar combinations, arrangements, contrivances, and other original qualities of their minds, and, consequently, put a stop to original thinking, which would otherwise be evinced, if the peculiarities of one mind were not drilled into the other. The instructors should, to the utmost of their power, show how far natural forms and colours may be arranged, combined, and contrived in every variety of way to accomplish the design required. And, when those of the ancients may be thought necessary to be produced for the same purpose, they should only be so to show the use they made of the like materials for effecting the same object, but not for imitation: on this too much cannot be said, that all designers may be made originals.

“Common sense, above all things, should be considered first, and infused into their young minds as early as possible, that they may have a thorough knowledge of the various things that are used and connected with the employment of which they are likely to enter into for their subsistence.

“A natural system should be established, that natural qualities may be demonstrated, by which means only can their faculties be properly exercised and perfected.”

According to our ideas of what a national system of education ought to be, all children whatever should be subjected to the same degree of education from infancy till they attain a certain age; say from 14 to 16 years. None ought to be taken from school, or put to work sooner. The degree of education which all should receive, should include all the useful and agreeable knowledge which children are capable of acquiring previously to the age mentioned, according to the most improved modes of teaching, commencing with infant schools. At the age of 14 or 15, it will then be time for the parents to consider what is proper to be done, with a view to the future welfare of their children, and to direct the remaining part of their education accordingly. Children whose parents could do nothing further for them would be taken from school, and put out as assistant servants, labourers, or mechanics; while the more wealthy would continue their children at school, commence a professional education, or send them to college, &c. Ten or twelve years ago, when we used to advocate this doctrine of high and equal education to all, we were told that we should unfit children for manual labour, and that the result would be that it would be impossible to get servants, &c. The public, however, are, we believe, now generally convinced that the relative differences between individuals would still be so great, that there would be just as great a proportion of the population ready to become servants and labourers as there is at present. To be convinced of this, it is only necessary to observe the differences which

exist in the taste, knowledge, abilities, and pursuits of the very highest classes who have been highly and equally educated. But enough in this place. We regret to observe that the country generally is not yet fully aware of the importance of this subject.

ART. II. *A Treatise on Engineering Field-Work ; containing Practical Land-surveying for Railways, &c.; with the Theory, Principles, and Practice of Levelling, and their Application to the Purposes of Civil Engineering : also, Parish and Subterranean Surveying, with Sectio-Planography, and every Information necessary to be known in the elementary Parts of Civil Engineering ; with Descriptions of the best Instruments used in Surveying and Levelling, their Adjustments and Methods of using in the Field. Illustrated by numerous Plates and Diagrams.* By Peter Bruff, Surveyor, &c. 8vo, pp. 162, and 8 plates. London. 10s. 6d.

THIS is a work much wanted at the present time, and which could not have been produced, had there not been, for the last seven years, so many surveys made in all parts of the country, for the purpose of determining the lines of railroads, and making arrangements connected with them. It is also very justly observed by the author, in his Preface, that no treatise on surveying has "been published since the fine mathematical instruments at present in use have been considered a necessary adjunct to the successful prosecution of land-surveying." The *Engineering Field-Work* may, therefore, be confidently recommended to all engineers and surveyors, as at once new and practical.

ART. III. *Catalogue of Works on Architecture, Building, and Furnishing, and on the Arts more immediately connected therewith, recently published.*

THE Carpenter's and Joiner's Pocket Director ; containing the most useful and select Prices of Carpenter's and Joiner's Work, &c. ; comprehending advantageous Tables and Calculations, with a Variety of other Information of practical Utility ; including, also, a copious List of the Trade, &c. By John Bennet, Engineer, &c., Author of "Artificer's Lexicon," &c. 12mo, cuts, pp. 232. London, 1838. 4s.

A useful little work, of the same nature as Bennet's Engineer and Pocket Director, noticed in p. 130.

The Bricklayer's, Plasterer's, Stone-Mason's, and Slater's Pocket Director ; comprehending select and useful Prices applicable to those Trades : also, valuable Tables and Calculations, with other Information of practical Utility ; including a copious

List of the Trade, &c. By J. Bennet, Engineer, &c. 12mo, pp. 82. London, 1838.

The lists occupy 42 pages, and the rest of the work 82 pages ; so that it is sufficiently dear at 3s. It is true there is a frontispiece of the Houses of Parliament on fire ; but, as that is of no manner of use in a work of this kind, it goes for nothing.

The Arcanum : comprising a concise Theory of Practical, Elementary, and Definitive Geometry ; exhibiting the various Transmutations of Superficies and Solids ; obtaining, also, their actual Capacity by the Mathematic Scale, including Solutions to the yet unanswered Problems of the Ancients. By John Bennet, Engineer. Parts I. and II., 8vo, plates. London, 1838. 2s. 6d.

This work is to be completed in sixteen parts, with upwards of 600 engravings. The frontispiece contains a figure entitled “The Problem of Napoleon Bonaparte to his Staff,” of which the author gives the following history :—

“The frontispiece to this work commences with the sublimely beautiful problem of Napoleon Bonaparte to his staff. The manner of obtaining this very valuable and desirable axiom is as follows :—During the publication of the work entitled ‘Geometrical Illustrations,’ and on the 9th of May, 1836, a paper was left for the author thereof at the publisher’s. The following is a literal copy, viz. :—

“‘Napoleon, on his voyage from Egypt, amused himself and staff with circular geometry : what circular geometry might be was only to be collected from the tradition, that the problem given by the future Emperor was “To divide the circumference of a circle into four equal parts by means of circles only.” The story, however, created the impression, that the idea which had passed through the mind of that eminent practical geometer was, that in the properties of the circle, or still more probably in the sphere, might be discovered the elements of geometrical organisation.’” (*Introduction*, p. 1.)

The Churches of London : a History and Description of the Ecclesiastical Edifices of the Metropolis. By George Godwin, jun., F.S.A., Associate of the Institute of British Architects. Containing Views of St. Mary Somerset ; St. Vedast, Foster Lane ; and St. Nicholas Cole Abbey. Engraved by Le Keux and S. Williams. No. XVI., 8vo. London, 1838. 1s.

The present number completes the first volume of this very beautiful and singularly cheap work. Among other enjoyments which we promise ourselves, when we have sufficient leisure, is that of making a tour of all the churches and churchyards within the ancient city of London ; and this is the work which we should take as our guide.

No. xvii., the first number of the second volume, has since been received.

Memorials of Cambridge : a Series of Views of the Colleges, Halls, Churches, and other Public Buildings of the University and Town

of Cambridge. Engraved by J. Le Keux, from Drawings by F. Mackenzie and J. A. Bell; with historical and descriptive Accounts of the Buildings, &c. By Thomas Wright, M.A., F.S.A., of Trinity College, Cambridge, and English Correspondent of the Historical Commission appointed by the Government of France. No. VI., 8vo. London, 1838. 1s.

It may be sufficient to state of this work, that it is a fit companion for the *Churches of London*. We regret to find that Mr. Le Keux is in a precarious state of health; and that, finding it necessary to abstract himself from professional labours for some time, the publication of the work is of necessity postponed. Nearly all the drawings, however, are made, and the work will ultimately be completed.

Report of the Committee of Management of the Association for the Promotion of the Fine Arts, called the Art Union of London, for the Year 1836-7. Pamph., 8vo, 22 pages.

The object and present state of the Art Union having been noticed in preceding Numbers, and, very recently, in p. 227., any further details here would be superfluous.

Observations on a proposed Line of Road from Shotley Bridge to Middleton in Teesdale, forming, with existing Roads, a direct and easy Line of Turnpike Road from Newcastle upon Tyne to Brough, Lancaster, Preston, and Liverpool. By T. Sopwith. Pamph. 8vo, 16 pages.

Like all Mr. Sopwith's writings, this tract is fraught with practical knowledge, and enlightened and extensive views; but, its main objects being local, we should not feel justified in devoting more space to it than a passing notice.

ART. IV. *Literary Notice.*

THE History of the Edifice of the Metropolitan Church of St. Peter, York, illustrated by Extracts from the Records of the See, &c., by Plans and Sections, and by Drawings of the Embellishments, by John Browne, Artist, &c., will shortly appear, and be completed in about 25 numbers.

Illustrations of the London and Birmingham Railway, sketched from nature, and drawn on stone, by John C. Bourne; with topographical and descriptive accounts of the origin, progress, and general execution of that great national work, by John Britton, F. S. A. The work will consist of 32 prints, showing so many of the remarkable scenes and buildings at and between the termini of the line. It will correspond in size and style of execution with the works of Harding, Roberts, Lewis, and Stanfield.

MISCELLANEOUS INTELLIGENCE.

ART. I. General Notices:

BRITISH Artists and Writers on Art.—There is an excellent article on this subject in the *British and Foreign Review* for April, in which the writer has pointed out the erroneous principles laid down in Sir Joshua Reynolds's *Discourses on Painting*. This had been previously done, to a certain extent, by Hazlitt, in his *Essay on certain Inconsistencies in Sir Joshua Reynolds's Discourses*, to which, however, justice was never done by the public. The chief error which Sir Joshua committed was in denying that there is such a thing as natural genius; an opinion which was fashionable, both in Britain and France, from the time of Helvetius and Burke down to the present century, and which still prevails among a number of persons in this country. The common sense of mankind always declared the contrary opinion, as many familiar expressions in common use amply testify; such as "capacity of mind," "strength of parts," "original powers," "natural faculties," &c. The article occupies nearly fifty pages, and is well worth the price of the Review. But there is another article, on the prospective Changes in Mechanics, occupying upwards of thirty pages, which induces us to recommend every young architect to peruse the number if possible.

The prospective Changes in Mechanics are the substitution of locomotive engines on common roads for railroads; the use of Hague's pneumatic transfer of power in such a manner as to distribute those manufactories which are now crowded together in large towns, like Manchester, all over the country, in villages. As minor changes may be mentioned, the use of distilled water in steam engines at sea; the application of the voltaic battery as a primary power; greater width between the rails in railways; lighter railway carriages; the construction of steam craft for war, &c. If what is stated by the reviewer, respecting the superiority of steam carriages on common roads to steam carriages on railroads, should prove true, the result to those who have sunk their money in railways will be most disastrous. (*British and Foreign Review*, April, 1838.)

Railroads.—Railroads are monopolies, and must ever remain so. "As an investment of capital, the railroad appears to be among the worst in point of security, and the most questionable in point of interest. Liverpool and Manchester are admitted to be the two greatest points of intercourse for goods and persons in the kingdom: that railway is said to have paid from the returns about nine per cent per annum. Is that sufficient interest for the quality of the security? Should another railway, or any other method of transport as desirable, be established, what becomes of the interest on the capital invested? What is the actual value of the property, iron, wood, bricks, buildings, and engines, of any railway? Not a fiftieth part of the sum expended. What, then, is the actual security for the capital invested? It is reduced to the probability that the road will continue for ever to monopolise the transit of that particular line; a probability which every engineer is slyly smiling at. If the most promising line of railway, with a monopoly, can only return nine per cent, what will the others of less promise return?"

"The London and Birmingham railway will sink six millions of money; the interest of that sum, at five per cent, is 300,000*l.* per annum; add as much more for expenses, and that will be a minimum, and we have 600,000*l.* per annum, to be gained, so as to pay the shareholders five per cent, and to keep their railway in order, in all its branches and details. Should any cheaper and as efficient method of travelling in that direction be established, what would be the value of the shares? The younger Brunel, a man of spirit and talent, must have seen that railways on the same construction as those of Liverpool, London, and Birmingham, were not sufficiently advanced to realise the promises so profusely made, and has therefore determined to endeavour to improve on those lines of railway, and has succeeded."

Steam Carriages on common Roads. — There is no doubt that steam carriages on the common roads are under perfect control ; are the safest steam machines ever used ; are to be propelled at great velocity ; are capable of ascending the loftiest hills ; and of being regulated in their speed down any descent. They are not to be stopped by snow which is not high enough to cover the engines ; and, even in that case, a proper front would open a passage where horses could not work. In weather like that which now prevails, the roads are superior for locomotive carriages to railways, as they present as hard a fulcrum, with as much more surface friction as to allow the engines to work with the greatest effect. In summer, they make no dust ; in winter, they can be kept at any required temperature ; as the fire is behind, no ashes come in contact with the passengers, as on the railways ; the motion is the easiest known ; and there is less noise than in a common carriage. Can any mechanic or reflecting man doubt that those vehicles will not soon be placed on the roads ? As soon as coachmasters, innkeepers, and the proprietors of property on the common roads, feel the injury that must ensue, if the whole transit is diverted from them to the railways, they will come forward and support the application of steam mechanical power for carriage of persons and goods. Where the roads are so soft (which is the worst condition they can present to a steam carriage) as to retard the required velocity, they will be made hard ; where the hills are very steep, they will be lowered, though that is by no means necessary ; and where rough they will be made smooth. The concrete road, of which there is a specimen beyond Lower Grosvenor Place, towards Vauxhall Bridge, is, taking into consideration every circumstance, superior to a railway for practical purposes. On a well-made road, consisting of hill, and dale, and level, a steam carriage will go at the rate of twenty miles an hour, carrying thirty persons, and the usual quantity of luggage, either on the vehicle or in a covered cart behind. The average number of persons who go on a train in the Liverpool and Manchester line is sixty, and generally a second engine is required to assist their ascent up the inclined plane : it follows, mercantilely speaking, that there is little or no difference between the railway carriage and the vehicle destined to run on the common roads. When the expense of a railway, and all its appendages, are brought into the calculation, the balance is decidedly in favour of the common road.

It has been said by the uninformed that the wear and tear on the roads would be so great as to prevent steam being applied for that purpose. Now, those who possess the greatest experience know that the wear and tear of the steam carriages on the common roads is not one half as great as on the railway ; and, if the roads are made all as good as the great western or the northern road out of London, the wear would be still less. By the employment of steam on the roads, monopoly, which the railways foster, would not be upheld ; the money and the interest lent on the tolls is secured ; from the improvement of the roads all the community would be benefited, and the steam carriages rather roll than injure the surface. (*British and Foreign Review*, April, 1838, p. 702.)

Enough has been said to put the public on their guard against the mania for railways ; and, perhaps, to turn their attention to the approaching substitution of mechanical for animal power on the common roads. (*Ib.*, p. 703.)

Hague's transferring Power. — " Our manufactories are, for the most part, erected where coals are to be cheaply and readily obtained, as they constitute at present the means of obtaining power. Thus, thousands and tens of thousands of human beings are crowded together in narrow streets and alleys, canopied, not by the sky, but by clouds of smoke and deleterious gases. When masses are so congregated, the heterogeneous collections are more difficult to bring under municipal regulations, and more difficult to civilise by moral and religious instruction, while greater facilities for vice are afforded. The necessity of manufactories being localised once destroyed, and a new era must commence. Two methods now exist which will gradually effect the change : one is perfected, and in operation ; the other is as yet in embryo, but

so far advanced, that the result may be looked on as certain. We will briefly describe the former, first in general terms, then in detail. The general term is, the method of transferring power. The greater the distance it is transferred, the more perfect will be its action. It can be subdivided as numerous as the gas which illuminates our streets. It is inodorous, innocuous, not perceptibly affected by heat or cold; it will neither burn, explode, rust, nor corrode; it may be conveyed from the same source, so as to be made to forge an anchor, which will hold the largest ship, or to fabricate the finest lace. The ocean-tide; the current of a river; a mountain torrent; may be made a source of power, producing effects in exact proportion to the original velocity or weight. Any primary power, whether fire, water, or wind, may be transferred with unerring certainty. We may live to see the waters of the Humber working the machinery of Leeds, Halifax, and Bradford; and the power of the Mersey conveyed by the side of the railway, to perform the same labour at Manchester and the neighbouring districts. We may, and blessed be the day! live to see our pyramids of manufactories, with their living masses, converted into villages, and systems of domestic industry, where the parent may work his loom, aided by his child, and yet the whole be under superintendence and regulation; and where even the quantity of power used will be unerringly registered, and, consequently, the quantity of work which has been done exactly known; where, instead of an atmosphere loaded with smoke, steam, and effluvia, may be for ever seen the clear vault of heaven; where, instead of polluted alleys and streets, never free from dirt and disease, gardens may smile, and afford an useful and intellectual occupation for the operative after the labour of the day.

We may now venture to describe, as simply as we can, the *modus operandi*. Suppose a torrent of water, in an almost inaccessible mountain, several miles from a spot admirably calculated for establishing a manufactory. If the torrent be made to work, by means of a water-wheel, exhausting pumps, which draw out the air from an air-tight tube, made of iron, or any material which will remain air-tight, and bear at the utmost, fifteen pounds external on the square inch, it is clear that, if the other end of the tube is connected with the slides of an engine, one side of the piston in the engine would be exhausted of the air in it: if the air is allowed to enter on the other side, it is evident, if the vacuum be perfect, that there would be the pressure of fifteen pounds on the square inch of the area of the piston: as the vacuum never is complete, make the calculation at two thirds, or ten pounds effective pressure. The position of the slides changing in the usual way, the reciprocative action ensues as in a steam engine. It is working with air instead of steam, and which air is exhausted through a tube at any distance, and carried either above or under ground, as most convenient, so that it be only kept air-tight. The friction of attenuating air, though trifling, must be considered. It must be always kept in mind that no power is or can be gained: it is only transferred, and that with some loss. But, as the difference between the same power produced by coals and steam, and the expenses of locality and other incidents, are great, the little loss can be easily borne. It must be clear that the original amount of power may be kept whole, or divided either into a few or many branches, and each taken to its separate engine; so that the aggregate, allowing for friction, does not exceed the primary amount of power obtained from the torrent, river, wind, or fire. John Hague, the engineer, of Cable Street, Wellclose Square, has earned the immortal honour of bringing to perfection that pneumatic transfer of power, and thus enrolled his name as a benefactor to his country. (*Ib.*, p. 685.)

Harper and Joyce's Stove. — The fuel used in this stove, and for the preparation of which a patent was taken out, turns out to be nothing more than charcoal, prepared in such a manner as to free it from its smell; and, as some say, to render it on that account still more dangerous than a common charcoal stove. As the analysis of the fuel has been given in the *Athenæum* for April 28., and in the *Mechanic's Magazine* for May 5., we consider it unnecessary

to republish them here. We shall only say that, according to the examination of Professor Everitt, the fuel used by Messrs. Harper and Joyce "appeared to be only well-burnt wood charcoal, with, perhaps, a little additional alkaline carbonate, not containing, as common charcoal often does, portions of wood half charred, which, when the charcoal is lighted, give off some smoke and certain vapours, irritating to the eyes and nose; but, as respects the quantity of carbonic acid and heat produced during the burning of a given weight of this and the same weight of well prepared charcoal, there is no appreciable difference." The analysis of Gay Lussac, which will also be found in the *Mechanic's Magazine*, is to the same effect; so that this stove, which has made so much noise during a short period, will probably very soon be only a matter of history. — *Cond.*

Dr. Arnott's Stove. — On this subject we refer to p. 230., and we shall again recur to it, probably in our July No. In the mean time we expect to see a new stove and new open fireplace, both by Julius Jeffreys, Esq. One peculiar feature in Mr. Jeffreys's stove is, that where there is no chimney the smoke will be carried off in an underground drain, probably on the double current ventilation principle. — *Cond.*

New Camera Lucida. — M. Kruines has presented to the Academy of Sciences a new camera lucida, by means of which the image of any distant object may be transferred to paper by tracing its outlines with a pencil. M. Kruines has substituted, for the quadrangular prism of Wollaston, two glasses, placed at such an angle to each other that the image of the object, after striking obliquely on the upper glass, is reflected to the lower glass, and from the latter to the eye, which at the same time sees clearly the paper and pencil through the lower glass. The image formed by this instrument is seen in an upright position, in consequence of being twice reflected; but it is not so distinct as in the old instrument, which forms an image that can be easily traced with a pencil. In other respects, the instrument of M. Kruines has the advantage, as it only costs half the price of the others. (*L'Echo du Monde savant*, Aug. 30. 1837.)

Zinc not oxidisable. — M. d'Arlingcourt has invented a kind of zinc which is not oxidised by the action of weak acids, or by atmospheric influences, although it is not yet known whether or not it will resist the effects of sea water; if it does, there would be a saving of two thirds by employing it instead of copper for sheathing ships. It is a compound of zinc, lead, and tin. (*L'Echo du Monde Savant*, Nov. 8. 1837.) Ornaments for affixing to cast-iron objects are frequently formed of this composition in London.

ART. II. Foreign Notices.

FRANCE.

ARCHITECTURAL Prize by the Institute of France. — At the last distribution of the prizes by the Institute of France, the subject for the *grand prix* in architecture was "a Pantheon," which the instructors directed the competitors to consider as an edifice consecrated to the memory of those distinguished men who add lustre to their country by their virtues, their services, or their talents; which might be regarded as a Temple of Glory, and treated with an architectural magnificence commensurate with the importance of the monument. The exterior, as well as the interior, were required to indicate the purpose of the building; and, besides, the hall of the Pantheon should contain porticoes, vast vestibules and halls of introduction, with a tribune in the interior, for the delivery of orations. The basement was to contain vaults for the burials, with ample staircases to go down to them. An enclosure, surrounded by porticoes, sufficiently large to contain the carriages and processions connected with the solemnities. Quarters were to be provided for four hundred soldiers, to whose care the building was to be confided. The first *grand*

prix was awarded to M. J. F. B. Guenepin, aged thirty years, pupil of M. Guenepin, member of the Institute of France, and of the Royal Institute of British Architects. The second was gained by M. A. J. Hénard, aged twenty-five years, pupil of MM. Huyot and Le Bas, also members of the Institute of France, and of the Royal Institute of British Architects; the third medal was adjudged to M. Jules Durn, aged 24 years, pupil of M. Callet. — *M. I. B. A. Feb.* 1838.

Canal parallel to the Banks of the Rhine, from Basle to Strasburg.— M. Fourneyron has communicated to the Academy the project for a railroad, with a parallel and navigable canal, from Basle to Strasburg, by Mulhouse, Colmar, &c. It has been found that, at low water, the waters of the Rhine, in their passage from Basle to Strasburg, have a force of from 400,000 to 500,000 horse power. The project in question consists in collecting a very small part of this power, by means of a lateral canal, upon which 100 mètres (325 ft.) of elevation will be divided into thirty falls, from Mulhouse to Strasburg. On this line a total force of 40,000 horse power will be obtained, which will produce an annual revenue of about 40,000,000 of francs. Alsace is now covered with steam engines, for which fuel is procured at about 80 or 100 leagues' distance. The expense of a steam engine is reckoned at 1200 or 1500 francs for each horse power, by the year; and it is believed that by the projected canal this same power might be produced for 200 francs per annum.

It is also proposed to form a railroad between Basle and Strasburg, upon which the waggons would be moved by hydraulic power (*moteurs*); for which purpose it is intended to employ another part of the strength of the waters of the river. The waggons and the diligences on this road would go at the rate of from six to eight leagues an hour. (*L'E'cho*, Dec. 13. 1837, p. 207.)

Cathedral of Chartres.— Last year, as it is well known, the imprudence of a journeyman plumber had nearly caused the destruction of the Cathedral of Chartres. The loss would have been irreparable; for the cathedral of Chartres is one of the richest monuments which remain to us of the middle ages. Its bells, painted windows, and the magnificent (*jubé*) gallery which surrounds its choir, add to the beauty of its somewhat austere form, and compose a whole which real connoisseurs alone can appreciate. Fortunately the progress of the fire left the most interesting parts almost uninjured. The recent experience which has been obtained, of the danger of introducing fire among old dried timbers, has prevented a repetition of the fault which was committed in 1822, in the case of the Cathedral of Rouen, when the wooden framework of the roof, having been set on fire by lightning, was reconstructed of wood. It has been now decided that that of the Cathedral of Chartres is to be made of metal; and the government, in adopting this plan, has only yielded to the advice of almost all the men of science. It has been thought necessary especially to order the construction of two bays of joists (*travées*), which were to be formed at the workshop of the artificer to whom this attempt was intrusted. These bays are to be composed of three trusses (*fermes*), in the form of ogee arches (*d'arcs ogives*) inscribed within a triangle, the form of which is determined by the gable ends (*pignons*) of masonry, which surmount the principal façade and each arm of the cross. The ogee arch (*l'arc ogive*), of about 40 ft. in extent (*ouverture*), is formed of a framework of metal, with open grooves (*châssis de fonte évidés à jour*) of an elegant but simple form, connected by large iron pins (*boulons*): the head rafters (*arbalétriers*) which form the exterior triangle, and which are intended to support the roof, are made of wrought iron. The trusses (*fermes*) are connected by cross quarters of timber (*entretoises*), which answer the double purpose of fixing them firmly (*assujettir*), and of supporting a grating intended to be covered with zinc or copper. Nothing can be imagined more elegant, and at the same time more imposing, than this construction; the effect of which will be increased when placed on the arches (*voûtes*) of the church: it will be in some degree a new cathedral, raised (*improvisée*) on the old one. The

project entrusted to M. Baron, architect of the cathedral, has obtained the unanimous approval of the visitors. (*L'E'cho*, Nov. 29. 1837, p. 187.)

Horloge de la Mort du Roi. — It is intended to reestablish at Versailles, in the court called Cour de Marbre, the clock of the king's death. This clock is, as is well known, without works, and it has but a single hand, which is placed at the precise hour at which the late king of France died, and which does not move during the whole of the reign of his successor. This royal custom dates from the time of Louis XIII. (*L'E'cho*, Nov. 29. 1837, p. 188.)

Safety Apparatus contrived by a Galley-Slave. — An individual named Tester, a mechanic, and Leterrier, a clockmaker, now confined in the Bagne at Brest, have lately invented a safety apparatus, calculated to prevent explosion in steam boilers. (*L'E'cho*, Dec. 13. 1837, p. 204.)

Museum of Besançon. — M. Magnencourt, the deputy, has presented to the museum of Besançon a copy in plaster of the friezes of the Parthenon, which he has brought from Italy. (*L'E'cho*, Dec. 13. 1837, p. 201.)

Ancient Church in Brittany. — A curious fragment of a very ancient church, which is mentioned in history under the name of Notre Dame de l'Hôtellerie, had long been preserved in the town of Dinan, in Brittany. This fragment, which consisted of an old gate, had often attracted the admiration of antiquaries; and it was the more valuable, as, though it dated from the romantic era, it had full arches (à plein cintre), and was ornamented like the richest architecture of the 16th century. It has just fallen a sacrifice to modern civilisation. (*L'E'cho*, Nov. 18. 1837, p. 175.)

Fonvielle's Filtering Apparatus. — M. Arago read to the Academy of Sciences a report made by a committee appointed to enquire into the subject of M. Henri de Fonvielle's newly invented filter. It is well known that rain water collected in cisterns cannot be preserved pure, unless it be made to pass through a stratum of some porous substance, in the interstices of which it may deposit the foreign matter collected in flowing over the roof, &c. Well water, on the other hand, always contains some earthy particles received in its passage through the soil; and river water, with respect to its purity, may be considered as intermediate between these two. Thus, the waters of the Seine, and those of the Garonne, are considerably purer than the waters of the springs and fountains in their neighbourhood; but this advantage is more than compensated for by the constant muddiness of the river water after rains or thaws. For example, the quantity of foreign matter held in suspension in the waters of the Seine, during floods, is sometimes as much as 1 in 2000; so that a person who drinks six pints of water in a day would also take $\frac{3}{4}$ oz. of earthy matter. To obviate this, it has in modern times been tried to purify water by filtration; and it was to effect the same end that the ancients constructed such expensive aqueducts. Standing at rest is not sufficient to purify the water which is required for the wants of a large town, for it would require at least eight or ten separate reservoirs, large enough to contain all the water wanted for one day's consumption; and this water, remaining stagnant for six or eight hours, could not fail to acquire a bad taste, from the decomposition of insects that had fallen into it, and from the vegetation there produced. Allowing water to stand at rest can only be considered as a means of disengaging the grosser impurities; and it is under this point of view only that reservoirs have been established in England and France. Science, or rather chance, has discovered a means of hastening, and even of rendering almost instantaneous, the precipitation of earthy matter held in suspension in water. This consists in throwing into it powdered alum. In the water of the Seine, by this process, the mud is seen to collect into long thick strips, and to be quickly deposited. This mode is, however, expensive; and, as it only separates the grosser particles, it does not supersede the ordinary modes of filtration. Sand and gravel have been tried, and found to answer to a certain extent, but they only deprive water of its earthy particles. Since it has been known that charcoal has the property of absorbing matters resulting from the putrefaction of organised bodies, filters of charcoal have been em-

ployed ; and this, at the present day, is the limit of the theory of filtration, no farther advance having been made as far as regards the question considered in an economical point of view. The only water company in London that purifies its water, that of Chelsea, does so by means of three large reservoirs of an acre in extent, and communicating with each other. In the first two the water is allowed to deposit its silt, and in the third it passes through a bed of sand and gravel 6 ft. thick, where it is finally purified. When the third basin is entirely empty, the sediment is removed, and replaced by a new layer of sand. The system introduced at Greenock in 1828, by Mr. Thom, has this advantage over that at Chelsea, that the clearing of the water is effected by itself, and that the whole mass of filtering sand is brought into use. This mass forms a bed about 5 ft. in thickness. The water may enter the basin filled by the sand and gravel either above or below. If the filtration is going on by the descent of the water, for example, when the filter is perceived to be obstructed, and flows slowly, the water is made to enter below, and in its ascent it carries away the sediment in the upper part by a discharge pipe. In France, filtration has not as yet been tried on a grand scale. It is done by means of a great number of small prismatic cases lined with lead, open above, and containing at the bottom a layer of charcoal between two layers of sand and gravel. The filtering matter, or at least the upper layers, in these boxes, should be renewed or cleaned every day, or even twice a day. Every superficial mètre ($3\frac{1}{4}$ ft.) of filter gives about 3000 litres (1300 gallons) of clear water in the 24 hours. (“ Il faudrait donc 7 mètres superficiels ou 7 caisses cubiques d’un mètre de côté par pouce de fontaine, et 7000 caisses pareilles pour le service d’une ville où la consommation serait de 1000 pouces.”) There is, however, a very simple means of augmenting the product of these boxes, which consists in having them hermetically closed, and causing the water to pass through the filtering mass, not by means of its own weight, or by a slight pressure, but by the action of great pressure. This is the principle of M. Fonvielle of the Hôtel Dieu’s filter, which, although it has only 1 mètre (3 ft. 3 in.) of superficies, gives every day, by the pressure of 35 in. of mercury (an atmosphere and a sixth), at least 50,000 litres (more than 50,000 quarts imperial measure) of clear water, or, at a maximum, 137,000 litres.

M. Ducommun has claimed the priority in the employment of pressure in filtration ; but it appears certain that M. Fonvielle was the first to prevent the return of the filtered matter by the action of the pressure ; and, lastly, his apparatus, like that of Mr. Thom at Greenock, has the advantage of admitting the water either above or below, and consequently of cleansing itself when choked up by the sediment. (*L’Echo du Monde Savant*, Aug. 23. 1837.)

GERMANY.

A Temple dedicated to the eminent Men of Germany. — The king of Bavaria is going to erect an edifice dedicated to all the worthies (gloires) of Germany, on a mountain situated on the banks of the Danube, near Ratisbon. The mountain is to be divided into terraces, and on the platform, at the summit a Grecian temple will be erected. A flight of steps 60 ft. broad will lead to the first terrace ; stairs divided into two flights will lead to a second terrace, and thence to three others. In all, there will be 300 steps, from the base of the mountain to the temple.

The edifice will be of grey marble : the exterior, decorated with pillars and pediments, will have some resemblance to the Madeleine at Paris. The pillars will be 54 in number, and of the same colour as the rest of the building. Under the vestibule, will be an entrance 24 ft. high, which will have a bronze door, leading to a gallery 150 ft. long by 50 ft. broad, and nearly of the same height. Projecting pilasters (des pilastres mis en saillie) will divide this apartment into three sections ; and are intended to break the uniformity. The ceiling of each section will be in the form of a tent, and will be covered with

bronze, and perforated for a skylight. Above the cornice, on both sides, a row of red marble panels will contain the names of those celebrated men whose portraits have not been obtained, in letters of gold. Fourteen giants, representing German warriors, will support the ceiling above the pillars and pilasters.

In the gallery, the busts will be arranged along the walls, on stylobates of grey marble. This gallery will be separated by pillars from a back chamber (*arrière salle*), executed in imitation of the opisthodomus of the Greek temples. A frieze 300 ft. in length will extend along the gallery, on which the most remarkable events of ancient Germany will be sculptured in Carrara marble. The two pediments will present two large historic pages: the one will represent the victory of Arminius over the Romans, and the other the *regeneration* of Germany, after the fall of Napoleon. The figures of these pediments will not be in bas relief: they will be in alto rilievo (*rondes basses*), like the Pantheon at Athens. By this means, they will be rendered visible at a much greater distance. (*L'E'cho*, Dec. 13. 1837, p. 201.)

Railroads in Austria. — By the *Augsburg Gazette*, we are informed that the Austrian government has at length resolved on executing a double project of vast utility to its Italian possessions, that of establishing two railroads; one from Vienna to Trieste, and the other from Venice to Milan. A regular weekly steam-boat communication is already established between Trieste and Venice, and this station will receive an adequate augmentation of its efficiency when the railroads are finished. The railroad from Venice to Milan is to be subdivided into three branch lines: the first, 62 leagues in length, will intersect the whole Lombardo-Venetian kingdom; the second, about the same length, will traverse Mantua, Lodi, the Milanese territory, and the whole of Lower Italy; and the third, 64 leagues in extent, will traverse the rich vicinity of the Lake of Garda, and pass the great towns of Brescia, Padua, Vicenza, and Verona.

Opening of a Railroad at Vienna. Letters from Vienna of November 23. state: — This morning the opening of our northern railroad took place. The number of spectators was immense, and it was easily perceived by this concourse how much interest the inhabitants of Vienna take in the progress of the arts (*l'industrie*). The emperor and empress were present at this solemnity. The hours of starting were 10 in the morning, noon, and 3 in the afternoon. The distance from the Danube to Wagram, which is 3 leagues, was performed in 23 minutes. The trains (*convois*) consisted each time of eight carriages, containing at least 130 persons. (*L'E'cho*, &c., Dec. 13. 1837, p. 201.)

ITALY.

The Excavations at Pompeii have been carried on for some time past with great activity; near the Street of Tombs, four pillars in mosaic, in good preservation, of the height of 15 ft., have been found in the passage (*allée*) of a house. This is the first discovery of the kind. (*L'E'cho*, Dec. 23. 1837, p. 207.)

GREECE.

Ancient Tomb. — A tomb has been opened at Athens, in which was found the body of a woman, having two candelabra of silver at her sides, as high as the thigh, but fallen to pieces. There were also a rich garland of flowers in solid gold, reaching from the left shoulder towards the right side, and in excellent preservation; seven gold rings with cut stones, ivory tablets, and other small ornaments. (*L'E'cho*, Dec. 23. 1837, p. 207.)

ART. III. Domestic Notices.

ENGLAND.

LANCASHIRE. — *Manchester Architectural Society.* The fifth *conversation* of this Society took place in the rooms, Mosley Street, on Wednesday

evening. There was a numerous attendance of the members and their friends, and the *soirée* was of a very delightful and instructive nature. Amongst the works of art exhibited, we noticed drawings by Prout, Stanfield, Cattermole, Aspland, Crouch, R. Lane; two clever drawings by J. W. Hance, one a view of Windsor, the other a design for a new Exchange; several very spirited female heads by C. A. Du Val, &c. There were two cabinet pictures by Bradley, one by Liversidge, a fine landscape by J. W. Frazer, Esq., and a very clever painting ("A boy selling fish") by C. A. Du Val. George Peel, Esq., contributed three exquisite bronzes; and Messrs. Agnew, Grundy, and Zanetti also furnished numerous works of art.

The Society being desirous of exhibiting the designs lately sent in competition for the Catholic Church in Manchester (under the impression that public examination is the most effectual mode of insuring just decisions in competitions), such architects as were candidates are respectfully requested to forward their designs as early as possible to the Society's rooms. — *John Wm. Hance, Hon. Secretary. 45. Mosley Street, April 6. 1838. (Newspaper.)*

Patent Roof. — We have had an opportunity of seeing a roof erected over a new building in Tasle Street, which is upon Witty and Co.'s patent principle, that was announced in the Staffordshire papers some time past. It is astonishing to see the simple plan and its power in supporting the lead roof. The principle is founded upon correct mechanical science. We understand the British Gas Company, at Hanley, have a beam upon the same plan over their retort house, of 50 ft. span, supporting an iron roof of 25 tons. This beam is made of sheet iron, and is as simple as the above-named roof in its appearance. The uses of complicated timber work in floors, roofs, and beams, upon the common system of carpentry, will, no doubt, be ultimately superseded by this principle, as it combines, in so rare a manner, simplicity and lightness with strength and economy. We believe this roof has been executed under the superintendence of Mr. Arthur Woolley, architect, of Princess Street. (*Manchester Times*, May 5.)

Laying the first Stones of the New Bridge, Manchester. — On Saturday week, the first three stones were laid of the bridge about to be erected in lieu of the Old Bridge, connecting Manchester and Salford, on a fine smooth bed of red sand-rock, about 12 ft. below the surface of the water. Mr. Armitage, the boroughreeve of Salford, and a few other gentlemen, including Mr. Carrington, the bridge-master, were present. The three first stones contain 124 cubic feet, weighing 9 tons 10 cwt., and the remainder vary from 1½ tons to 5 tons each, from the quarries of Bank Lane, near Bury, and the summit near Blackstone Edge. (*Blackburn Standard*, April 11. 1838.)

SCOTLAND.

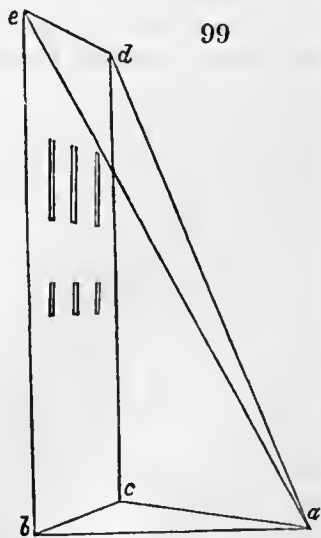
PERTHSHIRE. — *Victoria Bridge.* On Thursday, the 29th ult., the foundation-stone of a new bridge over the river Gauir was laid by Sir Niel Menzies of that ilk, Bart., and others, in due masonic form, and various coins and newspapers of the day deposited in a bottle, hermetically sealed. The ceremony taking place so soon after the accession of our youthful queen, and the scene being in the immediate vicinity of the village of Georgetown, and the barracks built soon after the "Forty-five," it naturally occurred that the building should be named after the queen. After drinking success to Victoria Bridge, an overflowing bumper was dedicated to Her Majesty Victoria I., accompanied with cheers that made "Garb-mheal" and the surrounding mountains echo; wishing her long life and happiness, and "that she may never forget the principles that placed the House of Brunswick on the British throne." (*Perth Constitutional*.)

ART. IV. Retrospective Criticism.

ERRATUM. — In p. 205. line 4. of note, for "*Monastères*" read "*Monuments*."

Parsey's Natural Convergence of Perpendiculars. (Vol. V. p. 92.)—I am much gratified by the gentle and courteous disposition which Mr. Parsey manifests in his reply to the remarks of Mr. Pocock and myself. Had we all such antagonists to contend with, we should be in no danger of forgetting the object of enquiry, in the desire of showing our own powers of sarcasm, as is too frequently the case in such discussions. I am well aware, also, of the disagreeable character of a dispute, in which one party is opposed by another with arguments which, long ago, and at an early period of his investigation, occurred to, and were answered in, his own mind. But Mr. Parsey must excuse me for bringing forward such arguments, inasmuch as the public will never be satisfied until they have all been answered: he must farther excuse me for doubting, as all disputants do, that they can all be answered. Mr. Pocock and I should certainly consider Mr. Parsey's fear of injury from our remarks as very complimentary, but it is altogether ungrounded. No mind whose opinion is worth anything is biassed by the mere assertion of individuals; but its spirit of enquiry is stimulated, and it immediately commences an investigation of the subject which Mr. Parsey, confident as he is of the truth of his practice (of his principles none can doubt the truth), ought not to dread, which, if he did dread, he could not, as the institutor of a new practice in drawing, avoid. However, as he invites us to "fair and courteous discussion," let me hope that he will find neither Mr. Pocock nor me more desirous of proving ourselves right than of arriving at the truth.

We all agree in principle: the disputed point is, whether vertical convergence should be represented in a drawing. Now, Mr. Parsey says that I err in affirming convergence is trifling when the object only subtends an angle of elevation of 60° : I do so, on calculating the convergence trigonometrically. I find Mr. Parsey's conclusion quite right, but I do not understand his diagram, owing to the misprinting of the letters; and he has not given us the mode by which he arrived at his conclusion. Perhaps the annexed demonstration is clearer. Let $b c d e$ (fig. 99.) be the front of any building, 100 ft. wide, and 176 ft. above the level of the eye. Let the eye of the spectator be at a . Let $a b$ $a c$ be each 100 ft.; consequently, angle $c a b = 60^\circ$, and angles $b a e$, $c a d$ also equal 60° . Therefore $e a = 200$ ft., and $d a = 200$ ft. And as $e d = 100$ ft. angle $e a d =$ about 29° , that is, less than half of angle $c a b$. And therefore the apparent length of $e d$ is rather less than half that of $e b$. It is evident, then, that I was wrong in affirming that this convergence was not to be represented, because it was *nearly imperceptible*. There is another reason for its non-representation, which Mr. Pocock has slightly noticed, but which Mr. Parsey evidently had not noticed. It appears strange that this immense convergence should not show itself by cutting angles with parallel perpendicular lines which are close to us. Does it do so? Let Mr. Parsey look out of his window, and I will look out of mine. It is within 3 ft. of me, and beyond it, at a distance of about fifty yards, rises one of the most noble buildings in Oxford, to a height of about 72 ft. Its perpendicular lines, therefore, though not quite so convergent as those of the diagram, must be considerably so. Yet the perpendicular lines of the window frame fall *precisely* on those of the distant building. I try them again and again: there is not an angle between them which a mite could measure; and the reason is evident. The argument which applies to the diagram, when $a b$ is 100 ft., and $a c$ 200 ft., applies with exactly the same force when $a b$ is 6 ft. and $a c$ 12 ft. There is precisely the same difference in the angle, the same in the length of the line; and the convergence of verticals, therefore, is *always the same when they subtend the same angle*, whether they be near or distant, 4 ft. or



99

4000 ft. high. The eye, therefore, puts the perpendicular lines of the picture into perspective (when the spectator stands at the point at which alone even the retiring lines can be in true perspective) exactly as much as it does those of nature; and, therefore, were the artist to represent any such convergence, he would be put altogether out by the increased convergence given by the eye.

The same is the case with regard to parallel horizontals, which are put into perspective in the picture in the same way; and, indeed, in general, whenever the lines in the painting are in the same place which they are in naturally, no convergence is to be represented.

These considerations will free Claude, and Canaletti, and the professor of perspective to the Royal Academy, from the charges of desperate error, which Mr. Parsey casts upon them; and we may still look at the works of our favourite masters without being annoyed by their ignorance of perspective.

With regard to what Mr. Parsey says of his spectrometer, he must put it aside in applying it to the eye. All perpendiculars, near or distant, correspond *exactly* with each other, and are parallel, apparently as well as actually parallel; that is, as far as regularly convergent lines can be parallel. They all meet in the same vanishing points, which are, as I have shown by means of reflections in water, one exactly above the spectator's head, and one below his feet.

I have only to add that, in allowing the angle of 60° to be measured wholly *above* the line of the eye, I have taken a license which Claude sometimes avails himself of, but, I think, Canaletti never. The eye is always to be supposed looking straight forward, and, therefore, can only embrace an angle of 30° above the line of sight, and an equal angle below. I have always found that, in sketching alps, or other precipices, I never made a satisfactory drawing, if the upward angle were more than 30° . However, in architecture, an upward angle of 60° is sometimes allowable. I neglected to say that, if Mr. Parsey will fix his eye at a given point, looking at a landscape through a pane of glass, and will trace on it with a diamond edge lines corresponding to those of the landscape, he will find all his retiring lines convergent, all his verticals vertical and parallel. This is a true test of perspective. — *Kata Phusin. Oxford, May 1. 1838.*

Preservation of Architectural Remains. (Vol. V. p. 230.)—Mr. F. Lush appears to think that devotion is so easily effaced from a congregation, that a mere step from the choir to the nave will put to flight all the proper feelings which so much pains has been taken to create; but, in truth, I have a better opinion of the really devout, and do not at all apprehend that the making a repository of the nave of a cathedral for the fragments of our ancient architecture, any more than the unsightly modern monumental tables which generally crowd these situations, will interfere with devotional pursuits. The idle, curious, or the inattentive, would, no doubt, find a ready excuse for their errors in these objects, but the truly religious will rather look upon them as monuments of the piety of our forefathers; and that, by placing them in this situation, we are rendering a tribute of the highest respect to their memory. How frequently might the precepts heard in the choir be brought fresh into our minds, with redoubled force, upon viewing the known works of some great ecclesiastical benefactor in the nave! How might we follow up the train of ideas, thus created, by a research into the private history of an enlightened mind! and how might we then leave the sacred pile, full of the benevolence which departed worth has brought to our recollection! And, as I have before stated, if one only is benefited a great object is attained. The few who would so soon shake off the influence of the solemn worship would as easily do so now, when loitering along the nave, scanning with listless eye the engraven names fixed upon its walls; perhaps names, too, only remembered by a few, and whose deeds are only inscribed on the marble tablet. Surely, the evil cannot be so great as Mr. Lush states, compared with the good which would be derived from the many opportunities of placing before the public numerous classifications of the architecture of the middle ages. A national museum could not

effect this object to so great an extent as it deserves. Not only the naves of our cathedrals, but the cloisters, where they are in existence, and some of the chapterhouses, might very properly be appropriated for this purpose. Can the ancient works of art, which are of so much importance to us, be more objectionable than the modern, which now crowd the naves of all our cathedrals? There would be no occasion to block up windows, to cut down ornaments, or remove columns and arches, for the ancient works; a practice too frequently resorted to for modern ones. The simplicity of the nave, and the uniformity of the aisles, without these relics of bygone days, is enough to create pleasurable sensations in the reflective mind; but, with such additions, which call up the zeal and energy of a few individuals who struggled with the darker spirits of superstition, can such minds be less humanised? Rather would they tend to soften the wilder passions, and create such benevolent associations as would tend to the further developement of an enlightened understanding. I would not limit the preservation of these invaluable treasures of our art by placing them in a single confined spot, where very few would have an opportunity of seeing them; but I would distribute them over the whole kingdom, in the manner I have named, so that they may be ever before the public, that a simultaneous increase of knowledge might be the effect; for, if we wish knowledge to be generally diffused, the means of doing so should not be confined to one spot. There would be little danger of cumbering the buildings, as by this general distribution, a few specimens would be enough to form a complete classification; and they would certainly add to the pictorial effect, and, in many instances, take off the bare and cheerless appearance of this part of the building. Another advantage to be gained by this arrangement is, that the peculiar style of architecture of the different parts of the country might be seen in each cathedral. — *E. B. L. London, May 5. 1838.*

ART. V. *Queries and Answers.*

GALVANISATION of Iron-Work, to preserve it from Rust. — M. Sorel of Paris has discovered that iron pipes, chimney pots, railings, &c., when galvanised, are less liable to rust; and there is, accordingly, an establishment commenced at Paris for carrying on the process, of which we expect shortly to give some further details. In the mean time, we shall be happy to hear from any of our readers who has a practical knowledge of the subject. — *Cond.*

Margary's Process for preventing the Dry Rot is said to be about one tenth of the cost of Kyan's corrosive sublimate, and to be equally applicable to canvass and cordage. "We have seen the experiments, and watched the progress of them. The Admiralty, with becoming zeal, on being informed of the facts, directed the fairest trials to be made at Woolwich, and have since had a quantity of canvass prepared under their own inspection." (*Brit. and For. Rev.*, April, 1838, p. 695.) [We should be glad of some particulars respecting this process from some person who has tried it. — *Cond.*]

ART. VI. *Institute of British Architects.*

FEB. 12. 1838. — P. F. Robinson, V. P., in the chair.

The balance in the treasurer's hands appeared to be 389*l.* 2*s.* 9*d.*

Elected. The Earl of Liverpool as an Honorary Fellow; F. H. Groves, S. S. T. Carlow, and W. A. Buckley, as Associates.

Presented. Casts of two Capitals of Marble Columns, from the Alhambra. An Engraving of the West front of Cologne Cathedral, from Dr. Moller of Darmstadt. Bryan's Biographical and Critical Dictionary of Painters and

Engravers, 2 vols. 4to. Impression of the Print of the Portrait of the late Sir Thomas Farquhar. Angell's Historical Sketch of the Royal Exchange, pamph. 8vo. Churches of London, No 14.

Paper read. The History of Llanthony Abbey, in illustration of the Drawings submitted for the Soane Medallion.

Soane Medallions. Four sets of Designs were sent in for the Restoration of Monasteries; namely, two for the Abbey of St. Mary, at York; one for Llanthony Abbey, Monmouthshire; and the fourth for Kirkstall Abbey, Yorkshire. The medallion was awarded to Samuel Sharp, Associate of York, for the Design for the Restoration of St. Mary's Abbey, at York, with the Motto, "Ut Rosa flos florum, sic est Domus ista Domorum." The design for the Restoration of Llanthony Abbey, by Mr. G. E. Laing, possessed so much merit, that a medal is to be struck for it, from the Institute Die, having the wreath on the obverse, and the reverse plain.

The Essay which gained the Soane medallion was that by W. W. Pocock, Associate, on Athenian Architecture.

Feb. 26. 1838. — J. B. Papworth, V. P., in the chair.

Elected. E. Lapidge, as Fellow.

Presented. Duke of Serradifalco's Work on Athenian Antiquities, vol 3. Portrait of the late John Rennie, Esq. A design for the Exchange at Hamburg. Giffard's Short Visit to the Ionian Islands, Athens, and the Morea, 1 vol. 8vo. Specimens of Stone from the Neighbourhood of Whitby. Simms on Asphaltic Mastic, pamph. 8vo. Outline Drawings of the Abbey of St. Mary, at York. Wild's Architectural Grandeur, 1 vol. folio. Specimens of Felt, from Messrs. Borradaile.

Read. A paper on the Qualities of Timbers, and their Application to Construction. A Description of the Sewer built under the Harrow Road, by the Great Western Railway Company, by T. L. Donaldson. A Communication from the Baron Wellerstedt, describing an anticombustible Mixture for the Saturation of Timber, so as to render roofs, floors, &c., less liable to ignition.

Report of the Council presented at the Annual General Meeting held 7th of May, 1838. — When the Council in May last made their Report, it might have been thought that topics of congratulation were exhausted in the enumeration of the successful results attending the formation and subsequent proceedings of this Institute, which had then acquired stability and importance from the Charter of Incorporation granted by his late Majesty William IV. The Queen, however, with that love for art and science which has distinguished the very first year of Her Majesty's reign, has been pleased to become the patroness of this Institute; at once placing us on a footing with the most distinguished societies of a similar nature in the empire. This honourable distinction renders it a duty still more incumbent upon the members to promote the objects of the Institute by their personal cooperation, and the contribution of communications. It is by such means only that the body can continue to merit the august patronage which has been so graciously conferred. We must emulate the zeal with which other scientific societies are pursuing their researches, and, like them, contribute to the advancement of knowledge, and a more general diffusion of the true principles of taste and science.

The removal of the Institute to apartments at once more convenient, and in a more desirable situation, has been productive of a larger attendance of members and visitors at the ordinary meetings. This circumstance, together with the additions constantly making to the books, models, and casts, prove that the rooms previously occupied would have been totally inadequate to the accommodation now absolutely necessary. The constant accession of new members, and the conviction that the progressive increase of the library and collection would outgrow even the present apartments, induced the Council to repeat their application to government for accommodation in some public building. The Council considered that the present state of the Institute rendered the renewal of the application made in 1835 not inopportune. This

application was, as you are aware, again unsuccessful. The Council, however, cannot but consider that the question of such assistance being rendered to public scientific bodies acquires strength in the public mind, and that the government will at length feel itself justified in acceding to the reasonable expectations of those societies, and thus promote, by their countenance and support, the advancement of objects which are not merely of interest to individuals, but highly important to the nation.

The Council have thought it necessary this session to provide series of lectures, as complete as possible, upon various subjects connected with construction, not only for the purpose of general information, but to show that the Institute is aware of the advantages which must result to architecture from every department of science being made to bear upon the main object and purpose for which it is founded. The number of such courses is limited only by the pecuniary means of the Society; but the Council trust that the funds may allow the continuance of the same system of instruction, and that each session may be distinguished by the delivery of fresh series as satisfactory as those to which the members have listened with so much pleasure and improvement. There is a wide field still open, and, independently of the history and theory of architecture, as an art of design, there are acoustics, optics, mechanics, and other subjects, forming parts of the necessary practical education of the architect, which still remain to be considered. It is no less a matter of congratulation that professors of distinguished merit should be induced to consider their respective sciences, not merely in an abstract point of view, but in reference to their useful application to our art, which involves the comfort, the health, and consequently the happiness, of every class.

The result of the competitions for the medals offered by the Institute has this year been most satisfactory, and has led to the institution of an additional medal of merit, in order that the author of one of the unsuccessful designs, which evinced considerable talent, might receive a mark of the approbation of the members. This medal may be awarded in future also to those drawings and essays which, although distinguished by much merit, have not the first medals adjudged to them. The successful manner in which the subject of the restoration of a conventual building has been treated has confirmed the Council in their opinion of the propriety of calling the attention of the architects scattered over the united kingdom to our national antiquities, confident that the timely investigation of these remains, so deeply interesting to us as Englishmen, will rescue them from that oblivion which might attend the neglect of a few more years. Thus we shall have, ere long, an important accumulation of authentic documents and information upon the monuments, the taste, the skill, and the customs of our ancestors, valuable not only to the architect, but to the antiquarian, the artist, the historian, and the philosopher. We thus at once enrich our collection, and pay a debt of gratitude to those from the contemplation of whose works we derive so much instruction and delight. At the same time, it is highly important that we should not allow our national predilections to lead us to neglect the classic works of the ancients. It is therefore to be hoped that one of the subjects proposed for the prizes in each year will continue to be devoted to Greek or Roman architecture. The investigation of the principles which guided the masters of antiquity is essential to the student, and opens sources of the sublime and beautiful, indispensable to him who would distinguish himself in the art. His perception and powers must be necessarily restricted who can reject, as unworthy his notice, the resources and suggestions which each style offers. The architecture of every period and of every nation has its limits and its peculiar beauties; for, although it would appear that there is a point of perfection beyond which the skill of man cannot go, so there is no period in the history of any people in which the taste is so degraded, no country so lost in barbarism, where (if the mental faculties be vigorously exercised) the productions are undeserving attention, and entirely devoid of some characteristic quality.

Happily, the Institute has not to deplore the loss of any of its members since the last annual meeting; but we have had an accession of seven Fellows and fourteen Associates; eight Honorary Fellows have been elected during the last twelve months, in which list we can enumerate names of the highest nobility, and of personages distinguished by their influence, their personal attainments, and their love for art. Ten foreign architects have also been added as Honorary and Corresponding Members; the greater number at the suggestion of our valued brother in art, Dr. Moller of Darmstadt, whose interest in the success of our Institute is as active as it is valuable. The members have been gratified in welcoming as a visiter among them Monsieur Hittorff; and our zealous colleague, Monsieur Châteauneuf of Hamburg, takes part in the proceedings of this day. Several foreign students have also visited this country, in order to acquire information as to our practical construction and the distribution of our buildings, in reference to our usages and customs. They have been furnished, by direction of the Council, with letters of introduction to the principal members of the profession, both in London and other parts of the United Kingdom, and have acknowledged the attentions which they have in consequence received. Several of our own members have also visited the Continent during the past year, and have experienced the most cordial welcome from our foreign brethren. Thus has a reciprocal sentiment of good feeling been kept up among the architects throughout Europe, and the Institute of British Architects is regarded as the central body of the profession, consolidating a system of active cooperation and interchange of kindly offices.

The Council has redeemed the pledge given in its last Report; a catalogue of the library and collection having been printed and distributed among the members. Since its appearance, however, the Institute has received numerous additions. During the year, 44 volumes have been received, 36 prints, 7 models and casts, and 76 specimens of stones, besides various other objects. One other important acquisition has been a volume containing about 100 original sketches and finished drawings by Bibiena, Panini, Oppenort, and others; a most valuable collection, which, as a work of reference, whether to the more experienced professor or the junior member, is rich in original ideas and specimens of the mastery of those artists in drawing, perspective, and chiaroscuro. This rare collection we owe to the liberality of Sir John Drummond Stewart, of Grandtully, Perthshire, who, with a lively interest in the objects of the Institute, which cannot be too highly appreciated, has promised to make further additions to the class of original drawings. It is also to be noticed, that a considerable portion of the books have been received as presents from the Pontifical Academy S. Luke at Rome, and the Imperial Academy of Vienna; and that the Academy of Milan only waits an opportunity for transmitting its contribution to the library of the Institute. Our Honorary and Corresponding Members, Messrs. Hittorff, Guenepin, Vaudoyer, De Klenze, Hetsch, Châteauneuf, Moller, have also enriched our collection; and the Chevalier Gasse of Naples has announced a present of a copy of the *Voyage Pittoresque de Napels*, in the compilation of which he took a considerable part.

The Council would inadequately represent the feelings of the members, were they not to record the continued interest in the prosperity of the Institute evinced by their noble President. His Lordship, since the last annual meeting, has twice thrown open his mansion to receive the members and friends of the Institute, as also the leading men in art, science, and literature of the day. By this kindness and liberality the profession has been brought, as a body, under His Lordship's hospitable roof, into immediate intercourse with the noble, the learned, and the distinguished of this period, and has felt how much it owed to him for that consideration, which the art must acquire from the influence of his generous and munificent example.

The Council submit to the consideration of the members the balance sheet

of the receipts and disbursements of the past year. Among the donations, it is impossible to omit particular reference to the liberal contribution of our Honorary Fellow G. B. Greenough, Esq., whose name is intimately connected with the rapid advance which has been made within so short a period in geology, a science immediately allied to the pursuits and studies of the architect. It will be perceived that the permanent income has progressively improved. On the other hand, an additional expense, also of a permanent nature, has been incurred by the increased annual rental of the present apartments; and a considerable sum has been expended in the fittings, and other unavoidable incidental disbursements, which are not likely to recur. This extraordinary expenditure has necessarily arisen out of the removal to these apartments, a measure authorised by the special general meeting of the 10th of July, 1837, and consequently occasioning the appropriation of part of the funds, otherwise to be invested for permanent uses, which appropriation has also been sanctioned by the general meeting of February last. The Council, however, are fully impressed with the necessity of keeping the current expenditure within the income: but the first establishment of all societies of this kind unavoidably requires much expense in the outfit, &c., in which it would be equally impolitic to be parsimonious or profuse. It has been the desire of the Council to avoid either of these extremes.

Hitherto the Institute has flourished beyond the most sanguine hopes of its founders; but we must not rest satisfied merely with what has been already accomplished. An important sphere of duty attaches to the position which we have been called upon to assume, by the wishes of the profession, by the necessities of the art, and the improving state of these departments of science, the application of which is so important to construction. Its members, therefore, are bound to work out the objects of its foundation, to investigate every branch of art and science connected with architecture, and thus to keep alive the interest now felt in our proceedings. To preserve the continuance of that support which we have already received from the learned, the wealthy, and the noble, we must make this an active and efficient society, and not rely upon a mere name. Each member must reflect that the Institute is in a degree dependent upon his personal assistance. It is by a combination of individual efforts alone that any value can attach to its proceedings, and that architecture, in its widest sense, can profit by our association. Let every member, therefore, at the end of each session, put this question to himself: "What have I contributed to the Institute during the past year?" and let him consider whether his answer be commensurate with the position which he holds in society and in the profession, and whether he has fulfilled the pledge given by him in the declaration which he signed upon his admission, "that by every lawful means in his power he will advance the objects of the Institute."

ART. VIII. *Obituary.*

M. FAUVEL, we learn, by a letter from M. Rizo Rangabé at Athens to the Royal Institute of British Architects, lately died at Smyrna. All Grecian travellers will remember with respect this patriarch of antiquarians, whose Greek antiquities formed the richest furniture of the French consulate at Athens, and whose stores of information upon the monuments around were open to every student who visited his hospitable though humble dwelling. — *M.I.B.A. May 23. 1838.*

THE
ARCHITECTURAL MAGAZINE.

JULY, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *The Poetry of Architecture.* By KATA PHUSIN.

No. 3. THE VILLA.

I. *The Mountain Villa. — Lago di Como.* (Continued.)

HAVING considered the propriety of the approach, it remains for us to investigate the nature of the feelings excited by the villas of the Lago di Como in particular, and of Italy in general.

We mentioned that the bases of the mountains bordering the Lake of Como were chiefly composed of black marble; black, at least, when polished, and very dark grey in its general effect. This is very finely stratified in beds varying in thickness from an inch to two or three feet; and these beds, taken of a medium thickness, form flat slabs, easily broken into rectangular fragments, which, being excessively compact in their grain, are admirably adapted for a building material. There is a little pale limestone* among the hills to the south; but this marble, or primitive limestone (for it is not highly crystalline), is not only more easy of access, but a more durable stone. Of this, consequently, almost all the buildings on the lake shore are built; and, therefore, were their material unconcealed, would be of a dark, monotonous, and melancholy grey tint, equally uninteresting to the eye, and depressing to the mind. To prevent this result, they are covered with different compositions, sometimes white, more frequently cream-coloured, and of varying depth; the mouldings and pilasters being frequently of deeper tones than the walls. The insides of the grottoes, however, when not cut in the rock itself, are left uncovered, thus forming a strong contrast with the

* *Pale limestone*, with dolomite. A coarse dolomite forms the mass of mountains on the east of Lake Lecco, Monte Campione, &c., and part of the other side, as well as the Monte del Novo, above Cadenabia: but the bases of the hills, along the *shore* of the Lake of Lecco, and all the mountains on both sides of the lower limb of Como, are black limestone. The whole northern half of the lake is bordered by gneiss or mica slate, with tertiary deposit where torrents enter it. So that the dolomite is only obtainable by ascending the hills, and incurring considerable expense of carriage; while the rocks of the shore split into blocks of their own accord, and are otherwise an excellent material.

whiteness outside; giving great depth, and permitting weeds and flowers to root themselves on the roughnesses, and rock streams to distil through the fissures of the dark stones; while all parts of the building to which the eye is drawn, by their form or details (except the capitals of the pilasters), such as the urns, the statues, the steps, or balustrades, are executed in very fine white marble, generally from the quarries of Carrara, which supply quantities of fragments of the finest quality, which, nevertheless, owing to their want of size, or to the presence of conspicuous veins, are unavailable for the higher purposes of sculpture.

Now, the first question is, is this very pale colour desirable? It is to be hoped so, or else the whole of Italy must be pronounced full of impropriety. The first circumstance in its favour is one which, though connected only with lake scenery, we shall notice at length, as it is a point of high importance in our own country. When a small piece of quiet water reposes in a valley, or lies embosomed among crags, its chief beauty is derived from our perception of crystalline depth, united with excessive slumber. In its limited surface we cannot get the sublimity of extent, but we may have the beauty of peace, and the majesty of depth. The object must therefore be, to get the eye off its surface, and to draw it down, to beguile it into that fairy land underneath, which is more beautiful than what it repeats, because it is all full of dreams unattainable and illimitable. This can only be done by keeping its edge out of sight, and guiding the eye off the land into the reflection, as if it were passing into a mist, until it finds itself swimming into the blue sky, with a thrill of unfathomable falling. (If there be not a touch of sky at the bottom, the water will be disagreeably black, and the clearer the more fearful.) Now, one touch of *white* reflection of an object at the edge will destroy the whole illusion, for it will come like the flash of light on armour, and will show the surface, not the depth: it will tell the eye whereabouts it is; will define the limit of the edge; and will turn the dream of limitless depth into a small, uninteresting, reposeless piece of water. In all small lakes or pools, therefore, steep borders of dark crag, or of thick foliage, are to be obtained, if possible; even a shingly shore will spoil them: and this was one reason, it will be remembered, for our admiration of the colour of the Westmoreland cottage, because it never broke the repose of water by its reflection. But this principle applies only to small pieces of water, on which we look down, as much as along the surface. As soon as we get a sheet, even if only a mile across, we lose depth; first, because it is almost impossible to get the surface without a breeze on some part of it; and, again, because we look along it, and get a great deal of sky in the reflection, which,

when occupying too much space, tells as mere flat light. But we may have the beauty of extent in a very high degree; and it is therefore desirable to know how far the water goes, that we may have a clear conception of its space. Now, its border, at a great distance, is always lost, unless it be defined by a very distinct line; and such a line is harsh, flat, and cutting on the eye. To avoid this, the border itself should be dark, as in the other case, so that there may be no continuous horizontal line of demarcation; but one or two bright white objects should be set here and there along or near the edge: their reflections will flash on the dark water, and will inform the eye in a moment of the whole distance and transparency of the surface it is traversing. When there is a slight swell on the water, they will come down in long, beautiful, perpendicular lines, mingling exquisitely with the streaky green of reflected foliage: when there is none, they become a distinct image of the object they repeat, endowed with infinite repose.

These remarks, true of small lakes whose edges are green, apply with far greater force to sheets of water on which the eye passes over ten or twenty miles in one long glance, and the prevailing colour of whose borders is, as we noticed when speaking of the Italian cottage, blue. The white reflections are here excessively valuable, giving space, brilliancy, and transparency; and furnish one very powerful apology, even did other objections render an apology necessary, for the pale tone of the colour of the villas, whose reflections, owing to their size and conspicuous situations, always take a considerable part in the scene, and are therefore things to be attentively considered in the erection of such buildings, particularly in a climate whose calmness renders its lakes quiet for the greater part of the day. Nothing, in fact, can be more beautiful than the intermingling of these bright lines with the darkness of the reversed cypresses seen against the deep azure of the distant hills in the crystalline waters of the lake, of which some one aptly says, "Deep within its azure rest, white villages sleep silently;" or than their columnar perspective, as village after village catches the light, and strikes the image to the very quietest recess of the narrow water, and the very furthest hollow of the folded hills.

From all this, it appears that the effect of the white villa in water is delightful. On land it is quite as important, but more doubtful. The first objection, which strikes us instantly when we *imagine* such a building, is, the want of repose, the startling glare of effect, induced by its unsubdued tint. But this objection does not strike us when we *see* the building; a circumstance which was partly accounted for before, in speaking of the cottage, and which we shall presently see further cause not to

be surprised at. A more important objection is, that such whiteness destroys a great deal of venerable character, and harmonises ill with the melancholy tones of surrounding landscape: and this requires detailed consideration. Paleness of colour destroys the majesty of a building; first, by hinting at a disguised and humble material; and, secondly, by taking away all appearance of age. We shall speak of the effect of the material presently; but the deprivation of apparent antiquity is dependent in a great degree on the colour, and in Italy, where, as we saw before, every thing ought to point to the past, is a serious injury, though, for several reasons, not so fatal as might be imagined; for we do not require, in a building raised as a light summer-house, wherein to while away a few pleasure hours, the evidence of ancestral dignity, without which the château or palace can possess hardly any beauty. We know that it is originally built rather as a plaything than as a monument; as the delight of an individual, not the possession of a race; and that the very lightness and carelessness of feeling with which such a domicile is entered and inhabited by its first builder would demand, to sympathise and keep in unison with them, not the kind of building adapted to excite the veneration of ages, but that which can most gaily minister to the amusement of hours. For all men desire to have memorials of their actions, but none of their recreations; inasmuch as we only wish that to be remembered which others will not, or cannot, perform or experience; and we know that all men can enjoy recreation as much as ourselves. We wish succeeding generations to admire our energy, but not even to be aware of our lassitude; to know when we moved, but not when we rested; how we ruled, not how we condescended: and, therefore, in the case of the triumphal arch, or the hereditary palace, if we are the builders, we desire stability; if the beholders, we are offended with novelty: but, in the case of the villa, the builder desires only a correspondence with his humour; the beholder, evidence of such correspondence; for he feels that the villa is most beautiful when it ministers most to pleasure; that it cannot minister to pleasure without perpetual change, so as to suit the varying ideas, and humours, and imaginations of its inhabitant; and that it cannot possess this light and variable habit with any appearance of antiquity. And, for a yet more important reason, such appearance is not desirable. Melancholy, when it is productive of pleasure, is accompanied either by loveliness in the object exciting it, or by a feeling of pride in the mind experiencing it. Without one of these, it becomes absolute pain, which all men throw off as soon as they can, and suffer under as long as their minds are too weak for the effort. Now, when it is accompanied by loveliness in the object exciting it, it forms

beauty; when by a feeling of pride, it constitutes the pleasure we experience in tragedy, when we have the pride of endurance, or in contemplating the ruin, or the monument, by which we are informed or reminded of the pride of the past. Hence, it appears that age is beautiful only when it is the decay of glory or of power, and memory only delightful when it reposes upon pride.* All remains, therefore, of what was merely devoted to pleasure; all evidence of lost enjoyment; all memorials of the recreation and rest of the departed; in a word, all desolation of delight, is productive of mere pain, for there is no feeling of exultation connected with it. Thus, in any ancient habitation, we pass with reverence and pleasurable emotion through the ordered armoury, where the lances lie, with none to wield; through the lofty hall, where the crested scutcheons glow with the honour of the dead: but we turn sickly away from the arbour which has no hand to tend it, and the boudoir which has no life to lighten it, and the smooth sword which has no light feet to dance on it. So it is in the villa: the more memory, the more sorrow; and, therefore, the less adaptation to its present purpose. But, though cheerful, it should be ethereal in its expression: "spirituel" is a good word, giving ideas of the very highest order of delight that can be obtained in the mere present. It seems, then, that for all these reasons an appearance of age is not desirable, far less necessary, in the villa; but its existing character must be in unison with its country; and it must appear to be inhabited by one brought up in that country, and imbued with its national feelings. In Italy, especially, though we can even here dispense with one component part of elevation of character, age, we must have all the others: we must have high feeling, beauty of form, and depth of effect, or the thing will be a barbarism; the inhabitant must be an Italian, full of imagination and emotion: a villa inhabited by an Englishman, no matter how close its imitation of others, will always be preposterous.

We find, therefore, that white is not to be blamed in the villa for destroying its antiquity; neither is it reprehensible, as harmonising ill with the surrounding landscape: on the contrary, it adds to its brilliancy, without taking away from its depth of tone. We shall consider it as an element of landscape, more particularly, when we come to speak of grouping.

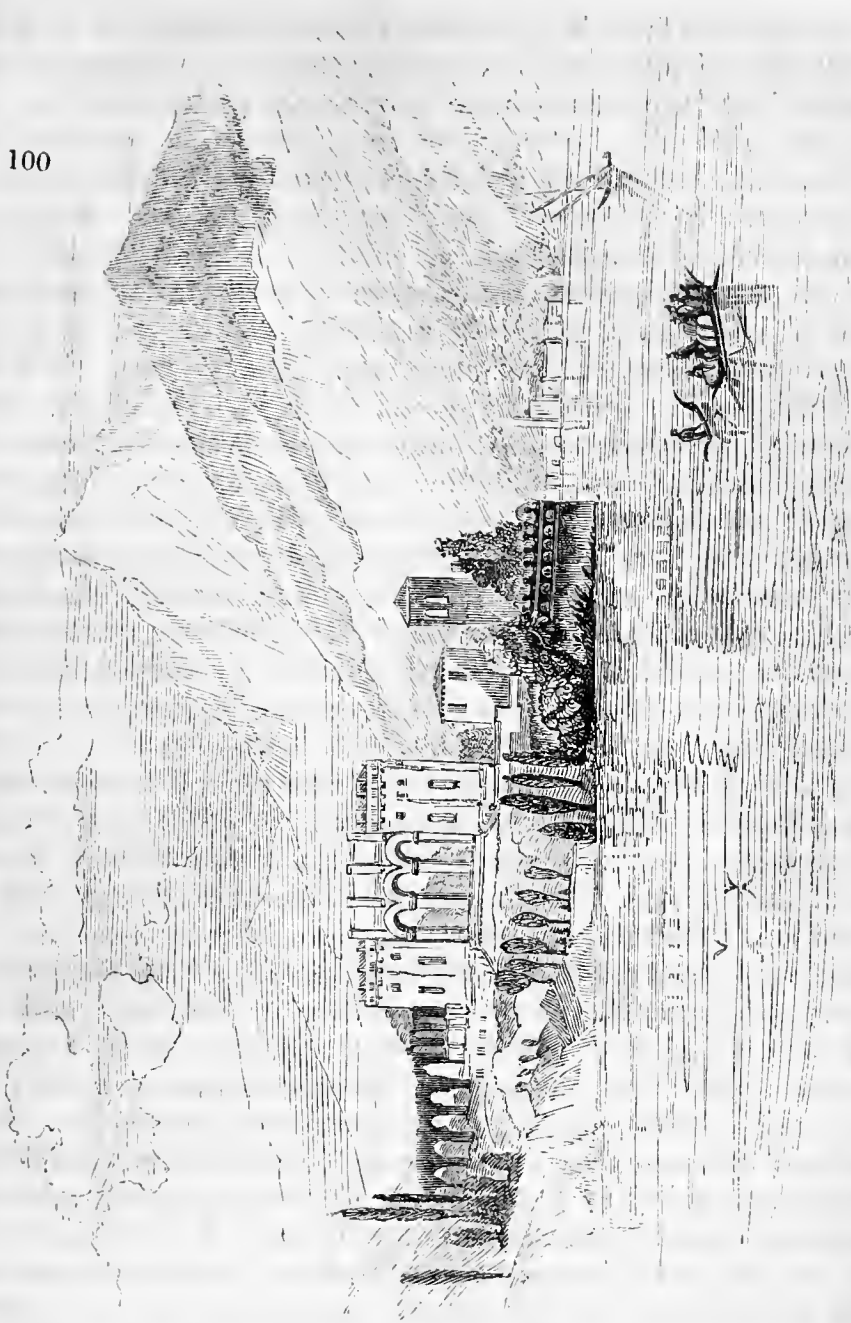
There remains only one accusation to be answered; viz. that it hints at a paltry and unsubstantial material: and this leads us to

* Observe, we are not speaking of emotions felt on remembering what we ourselves have enjoyed, for then the imagination is productive of pleasure by replacing us in enjoyment, but of the feelings excited in the *indifferent* spectator, by the evident decay of power or desolation of enjoyment, of which the first ennobles, the other only harrows, the spirit.

the second question, Is this material allowable? If it were distinctly felt by the eye to be stucco, there could be no question about the matter, it would be decidedly disagreeable; but all the parts to which the eye is attracted are executed in marble, and the stucco merely forms the dead flat of the building, not a single wreath of ornament being formed of it. Its surface is smooth and bright, and altogether avoids what a stone building, when not built of large masses, and uncharged with ornament, always forces upon the attention, the rectangular lines of the blocks, which, however nicely fitted they may be, are "horrible! most horrible!" There is also a great deal of ease and softness in the angular lines of the stucco, which are never sharp or harsh, like those of stone; and it receives shadows with great beauty, a point of infinite importance in this climate; giving them lightness and transparency, without any diminution of depth. It is also rather agreeable to the eye, to pass from the sharp carving of the marble decorations to the ease and smoothness of the stucco; while the utter want of interest in those parts which are executed in it prevents the humility of the material from being offensive: for this passage of the eye from the marble to the composition is managed with the dexterity of the artist, who, that the attention may be drawn to the single point of the picture which is his subject, leaves the rest so obscured and slightly painted, that the mind loses it altogether in its attention to the principal feature.

With all, however, that can be alleged in extenuation of its faults, it cannot be denied that the stucco *does* take away so much of the dignity of the building, that, unless we find enough bestowed by its form and details to counterbalance, and a great deal more than counterbalance, the deterioration occasioned by tone and material, the whole edifice must be condemned, as incongruous with the spirit of the climate, and even with the character of its own gardens and approach. It remains, therefore, to notice the details themselves. Its form is simple to a degree; the roof generally quite flat, so as to leave the mass in the form of a parallelepiped, in general without wings or adjuncts of any sort. Villa Somma-Riva (fig. 87. in p. 247.) is a good example of this general form and proportion, though it has an arched passage on each side, which takes away from its massiness. This excessive weight of effect would be injurious, if the building were set by itself; but, as it always forms the apex of a series of complicated terraces, it both relieves them and gains great dignity by its own unbroken simplicity of size. This general effect of form is not injured, when, as is often the case, an open passage is left in the centre of the building, under tall and well-proportioned arches, supported by pilasters (never by columns). Villa Porro, Lago di Como (fig. 100.), is a good

100



example of this method. The arches hardly ever exceed three in number, and these are all of the same size, so that the crowns of the arches continue the horizontal lines of the rest of the building. Were the centre one higher than the others, these lines would be interrupted, and a great deal of simplicity lost. The covered space under these arches is a delightful, shaded, and breezy retreat in the heat of the day; and the entrance doors usually open into it, so that a current of cool air is obtainable by throwing them open.

The building itself consists of three floors: we remember no instance of a greater number, and only one or two of fewer. It is, in general, crowned with a light balustrade, surmounted by

statues at intervals. The windows of the uppermost floor are usually square, often without any architrave. Those of the principal floor are surrounded with broad architraves, but are frequently destitute of frieze or cornice. They have usually flat bands at the bottom, and their aperture is a double square. Their recess is very deep, so as not to let the sun fall far into the interior. The interval between them is very variable. In some of the villas of highest pretensions, such as those on the banks of the Brenta, that of Isola Bella, and others, which do not face the south, it is not much more than the breadth of the two architraves, so that the rooms within are filled with light. When this is the case, the windows have friezes and cornices. But, when the building fronts the south, the interval is often very great, as in the case of the Villa Porro. The ground-floor windows are frequently set in tall arches, supported on deeply engaged pilasters, as in fig. 87. p. 247. (Somma-Riva). The door is not large, and never entered by high steps, as it generally opens on a terrace of considerable height, or on a wide landing-place at the head of a flight of fifty or sixty steps descending through the gardens.

Now, it will be observed, that, in these general forms, though there is no splendour, there is great dignity. The lines throughout are simple to a degree, entirely uninterrupted by decorations of any kind, so that the beauty of their proportions is left visible and evident. We shall see hereafter that ornament in Grecian architecture, while, when well managed, it always adds to its grace, invariably takes away from its majesty; and that these two attributes never can exist together in their highest degrees. By the utter absence of decoration, therefore, the Italian villa, possessing, as it usually does, great beauty of proportion, attains a degree of elevation of character, which impresses the mind in a manner which it finds difficult to account for by any consideration of its simple details or moderate size; while, at the same time, it lays so little claim to the attention, and is so subdued in its character, that it is enabled to occupy a conspicuous place in a landscape, without any appearance of intrusion. The glance of the beholder rises from the labyrinth of terrace and arbour beneath, almost weariedly; it meets, as it ascends, with a gradual increase of bright marble and simple light, and with a proportionate diminution of dark foliage and complicated shadow, till it rests finally on a piece of simple brilliancy, chaste and unpretending, yet singularly dignified; and does not find its colour too harsh, because its form is so simple: for colour of any kind is only injurious when the eye is too much attracted to it; and, when there is so much quietness of detail as to prevent this misfortune, the building will possess the cheerfulness, without losing the tranquillity, and will seem to

have been erected, and to be inhabited, by a mind of that beautiful temperament wherein modesty tempers majesty, and gentleness mingles with rejoicing, which, above all others, is most suited to the essence, and most interwoven with the spirit, of the natural beauty whose peculiar power is invariably repose.

So much for its general character. Considered by principles of composition, it will also be found beautiful. Its prevailing lines are horizontal; and every artist knows that, where peaks of any kind are in sight, the lines above which they rise ought to be flat. It has not one acute angle in all its details, and very few intersections of verticals with horizontals; while all that do intersect seem useful as supporting the mass. The just application of the statues at the top is more doubtful, and is considered reprehensible by several high authorities, who, nevertheless, are inconsistent enough to let the balustrade pass uncalumniated, though it is objectionable on exactly the same grounds; for, if the statues suggest the enquiry of "What are they doing there?" the balustrade compels its beholder to ask, "whom it keeps from tumbling over?" The truth is, that the balustrade and statues derive their origin from a period when there was easy access to the roof of either temple or villa; (that there was such access is proved by a passage in the *Iphigenia Taurica*, line 113., where Orestes speaks of getting up to the triglyphs of a Doric temple as an easy matter;) and when the flat roofs were used, not, perhaps, as an evening promenade, as in Palestine, but as a place of observation, and occasionally of defence. They were composed of large flat slabs of stone (κεράμος*), peculiarly adapted for walking, one or two of which, when taken up, left an opening of easy access into the house, as in Luke, v. 19., and were perpetually used in Greece as missile weapons, in the event of a hostile attack or sedition in the city, by parties of old men, women, and children, who used, as a matter of course, to retire to the roof as a place of convenient defence. By such attacks from the roof with the κέραμος the Thebans were thrown into confusion in Plataea. (*Thucyd.*, ii. 4.) So, also, we find the roof immediately resorted to in the case of the starving of Pausanias in the Temple of Minerva of the Brazen House, and in that of the massacre of the aristocratic party at Corcyra (*Thucyd.*, iv. 48.):—'Αναβάντες δὲ ἐπὶ τὸ τέγος τοῦ οἰκηματος, καὶ διελόντες τὴν ὀροφὴν, ἔβαλλον τῷ κέραμῳ. Now, where the roof was thus a place of frequent resort, there

* In the large buildings, that is: κέραμος also signifies earthen tiling, and sometimes earthenware in general, as in *Herodotus*, iii. 6. It appears that such tiling was frequently used in smaller edifices. The Greeks may have derived their flat roofs from Egypt. Herodotus mentions of the Labyrinth of the Twelve Kings, that ὀροφὴ δὲ πάντων τούτων λιθίνη, but not as if the circumstance were in the least extraordinary.

could be no more useful decoration than a balustrade; nor one more appropriate or beautiful, than occasional statues in attitudes of watchfulness, expectation, or observation: and even now, wherever the roof is flat, we have an idea of convenience and facility of access, which still renders the balustrade agreeable, and the statue beautiful, if well designed. It must not be a figure of perfect peace or repose, far less should it be in violent action; but it should be fixed in that quick startled stillness, which is the result of intent observation or expectation, and which seems ready to start into motion every instant. Its height should be slightly colossal, as it is always to be seen against the sky; and its draperies should not be too heavy, as the eye will always expect them to be caught by the wind. We shall enter into this subject, however, more fully hereafter. We only wish at present to vindicate from the charge of impropriety one of the chief features of the Italian villa. Its white figures, always marble, remain entirely unsullied by the weather, and stand out with great majesty against the blue air behind them, taking away from the heaviness, without destroying the simplicity, of the general form.

It seems, then, that, by its form and details, the villa of the Lago di Como attains so high a degree of elevation of character, as not only brings it into harmony of its *locus*, without any assistance from appearance of antiquity, but may, we think, permit it to dispense even with solidity of material, and appear in light summer stucco, instead of raising itself in imperishable marble. And this conclusion, which is merely theoretical, is verified by fact; for we remember no instance, except in cases where poverty had overpowered pretension, or decay had turned rejoicing into silence, in which the lightness of the material was offensive to the feelings; in all cases, it is agreeable to the eye. Where it is allowed to get worn, and discoloured, and broken, it induces a wretched mockery of the dignified form which it preserves; but, as long as it is renewed at proper periods, and watched over by the eye of its inhabitant, it is an excellent and easily managed medium of effect.

With all the praise, however, which we have bestowed upon it, we do not say that the villa of the Larian Lake is perfection; indeed we cannot say so, until we have compared it with a few other instances, chiefly to be found in Italy, on whose soil we delay, as being the native country of the villa, properly so called, and as even yet being almost the only spot of Europe where any good specimens of it are to be found: for we do not understand by the term "villa," a cubic erection, with one window on each side of a verdant door, and three in the second and uppermost story, such as the word suggests to the fertile imagination of ruralising cheesemongers; neither do we under-

stand the quiet and unpretending country house of a respectable gentleman; neither do we understand such a magnificent mass of hereditary stone as generally forms the autumn retreat of an English noble; but we understand the light but elaborate summer habitation, raised however and wherever it pleases his fancy, by some individual of great wealth and influence, who can enrich it with every attribute of beauty; furnish it with every appurtenance of pleasure; and repose in it with the dignity of a mind trained to exertion or authority. Such a building could not exist in Greece, where every district a mile and a quarter square was quarrelling with all its neighbours. It could exist, and did exist, in Italy, where the Roman power secured tranquillity, and the Roman constitution distributed its authority among a great number of individuals, on whom, while it raised them to a position of great influence, and, in its later times, of wealth, it did not bestow the power of raising palaces or private fortresses. The villa was their peculiar habitation, their only resource, and a most agreeable one; because the multitudes of the kingdom being, for a long period, confined to a narrow territory, though ruling the world, rendered the population of the city so dense, as to drive out its higher ranks to the neighbouring hamlets of Tibur and Tusculum. In other districts of Europe the villa is not found, because in very perfect monarchies, as in Austria, the power is thrown chiefly into the hands of a few, who build themselves palaces, not villas; and in perfect republics, as in Switzerland, the power is so split among the multitude, that nobody can build himself any thing. In general, in kingdoms of great extent, the country house becomes the permanent and hereditary habitation; and the villas are all crowded together, and form gingerbread rows in the environs of the capital: and, in France and Germany, the excessively disturbed state of affairs in the middle ages compelled every petty baron or noble to defend himself, and retaliate on his neighbours as he best could, till the villa was lost in the château and the fortress; and men now continue to build as their forefathers built (and long may they do so), surrounding the domicile of pleasure with a moat and a glacis, and guarding its garret windows with turrets and towers: while, in England, the nobles, comparatively few, and of great power, inhabit palaces, not villas; and the rest of the population is chiefly crowded into cities, in the activity of commerce, or dispersed over estates in that of agriculture; leaving only one grade of gentry, who have neither the taste to desire, nor the power to erect, the villa, properly so called.

We must not, therefore, be surprised, if, on leaving Italy, where the crowd of poverty-stricken nobility can still repose their pride in the true villa, we find no farther examples of it

worthy of consideration, though we hope to have far greater pleasure in contemplating its substitutes, the château and the fortress. We must be excused, therefore, for devoting one paper more to the state of villa architecture in Italy; after which we shall endeavour to apply the principles we shall have deduced to the correction of some abuses in the erection of English country houses, in cases where scenery would demand beauty of design, and wealth permit finish of decoration.

ART. II. *Notes to the Italian Villa*, No. 3. p. 244. By KATA PHUSIN.

THE following paragraphs ought to have been given as foot notes, along with the article on the Italian Villa in our last Number, p. 241.; but they were inadvertently overlooked by the Conductor, who begs to apologise to Kata Phusin, and to his readers, for the seeming neglect.

The Character of the Italian Mountain Scenery. (p. 244.)—That Italian mountain scenery has less elevation of character than the plains may appear singular; but there are many simple reasons for a fact which, we doubt not, has been felt by every one (capable of feeling anything), who ever left the Alps to pass into Lombardy. The first is, that a mountain scene, as we saw in the last paper, bears no traces of decay, since it never possessed any of life. The desolation of the sterile peaks, never having been interrupted, is altogether free from the melancholy which is consequent on the passing away of interruption. They stood up in the time of Italy's glory, into the voiceless air, while all the life and light which she remembers now was working and moving at their feet, an animated cloud, which they did not feel, and do not miss. That region of life never reached up their flanks, and has left them no memorials of its being; they have no associations, no monuments, no memories; we look on them as we would on other hills: things of abstract and natural magnificence, which the presence of man could not increase, nor his departure sadden. They are, in consequence, destitute of all that renders the name of Ausonia thrilling, or her champaigns beautiful, beyond the mere splendour of climate; and even that splendour is unshared by the mountain; its cold atmosphere being undistinguished by any of that rich, purple, ethereal transparency, which gives the air of the plains its depth of feeling: we can find no better expression.

Secondly. In all hill scenery, though there is increase of size, there is want of distance. We are not speaking of views from summits, but of the average aspect of valleys. Suppose the mountains be 10,000 ft. high, their summit will not be more than six miles distant in a direct line; and there is a general sense of confinement, induced by their wall-like boundaries, which is painful, contrasted with the wide expatiation of spirit induced by a distant view over plains. In ordinary countries, however, where the plain is an uninteresting mass of cultivation, the sublimity of distance is not to be compared to that of size: but, where every yard of the cultivated country has its tale to tell; where it is perpetually intersected by rivers whose names are meaning music, and glancing with cities and villages, every one of which has its own halo round its head; and where the eye is carried by the clearness of the air over the blue of the farthest horizon, without finding one wreath of mist, or one shadowy cloud, to check the distinctness of the impression; the mental emotions excited are richer, and deeper, and swifter than could be awakened by the noblest hills of the earth, unconnected with the deeds of men.

Lastly. The plain country of Italy has not even to choose between the glory of distance and of size, for it has both. I do not think there is a spot, from Venice to Messina, where two ranges of mountains, at the least, are not in sight at the same time. In Lombardy, the Alps are on one side, the Apennines on the other; in the Venetian territory, the Alps, Apennines, and Euganean Hills; going southwards, the Apennines always, their outworks running far towards the sea, and the coast itself frequently mountainous. Now, the aspect of a noble range of hills, at a considerable distance, is, in our opinion, far more imposing (considered in the abstract) than they are seen near: their height is better told, their outlines softer and more melodious, their majesty more mysterious. But, in Italy, they gain more by distance than majesty: they gain life. They cease to be the cold forgetful things they were; they hold the noble plains in their lap, and become venerable, as having looked down upon them, and watched over them for ever, unchanging; they become part of the picture of associations: we endow them with memory, and then feel them to be possessed of all that is glorious on earth.

For these three reasons, then, the plains of Italy possess far more elevation of character than her hill scenery. To the northward, this contrast is felt very strikingly, as the distinction is well marked, the Alps rising sharply and suddenly. To the southward, the plain is more mingled with low projecting promontories, and unites almost every kind of beauty. However, even among her northern lakes, the richness of the low climate, and the magnificence of form and colour presented by the distant Alps, raise the character of the scene immeasurably above that of most hill landscapes, even were those natural features entirely unassisted by associations which, though more sparingly scattered than in the south, are sufficient to give light to every leaf, and voice to every wave.

The Avalanche brands the Mountain Top. (p. 244.) — There are two kinds of winter avalanches; the one, sheets of frozen snow, sliding on the surface of others. The swiftness of these, as the clavendier of the Convent of St. Bernard told me, he could compare to nothing but that of a cannon ball of equal size. The other is a rolling mass of snow, accumulating in its descent. This, grazing the bare hill side, tears up its surface like dust, bringing away soil, rock, and vegetation, as a grazing ball tears flesh; and leaving its withered path distinct on the green hill side, as if the mountain had been branded with red-hot iron. They generally keep to the same paths; but, when the snow accumulates, and sends down one the wrong way, it has been known to cut down a pine forest, as a scythe mows grass. The tale of its work is well told by the seared and branded marks on the hill summits and sides.

ART. III. *The sacred Tombs of the Valley of Jehoshaphat.* By M. RAOUL ROCHETTE.

(Translated from *L'E'cho du Monde savant*, Dec. 30. 1837, p. 207, 208.)

TOMB of Helen. — At the distance of three stadii from Jerusalem, once stood the tomb of a princess named Helen, wife and sister of Monabasus, king of the Adiabeniens, which Pausanias compares to the celebrated tomb of Mausolus. From what Josephus says of it in his *Antiquities*, it must have been formed of a large basement or platform (*terre-plein*) of marble, surmounted by three pyramids, which represent, no doubt, the three members of the royal family of Judah, interred in the tomb; viz., Monabasus, Helen, and Isates. The bodies were placed in the solid part of the base, which for this purpose was

divided into several compartments ; and with the bodies of the princes were deposited those of their servants, who, according to the manners of the East, accompanied them to their last abode ; or, in other words, were sacrificed to their manes. The name of the Tomb of the Kings of Judah has been improperly given to this monument, by writers who could not believe that the real tombs of the kings were lost to us, and who thought they had discovered them in that of Helen.

Tomb of the Maccabees. — Josephus gives us very curious and circumstantial details of this monument. (*Ant.*, lib. i.) It was in every respect like that of Helen. The basement was of white marble, polished ; it was surmounted by six pyramids, placed in two rows ; and by a seventh, which rose in the middle, and which is supposed to have been consecrated to Judas Maccabeus. These pyramids, placed on the funeral monuments of the Jews, were, undoubtedly, as they were among the Egyptians and Phœnicians, the representation of the principle of life in the temples, and of death on the tombs. It is impossible not to be struck with the resemblance which exists between the two monuments just described, and the most famous tomb of antiquity, viz. that of Mausolus, which was also composed of a large basement surmounted by a pyramid, and the celebrity of which, as it is well known, caused the name of *mausoleum* to be given to the largest and most beautiful tombs that were made in after times.

Tomb of Mausolus. — The intimate connexion which exists between the monuments of Helen, of the Maccabees, and of Mausolus, and the high reputation of the latter, has induced M. Raoul Rochette to dwell rather more at length on it, and to show its exterior and interior arrangement, in order to enable his readers to form a better judgment of the Jewish tombs, the arrangements of which were undoubtedly nearly the same.

The tomb of Mausolus, which was considered by the ancients as one of the seven wonders of the world, was erected to the memory of the king of Caria of that name, by Artemisia, his wife. This monument, which has served as a type and model for those of the Jews, was built, towards the hundredth Olympiad by the architects Satyrus and Phitæus. It was decorated with statues and bas-reliefs in marble, and baked earth (*terre cuite*), covered with gold leaf (*feuilles d'or*), by the celebrated Scopas, Bryaxis, Timotheus, and Leochares ; and Praxiteles executed the interior bas-reliefs. Pliny, in his *History* (book xxxvi.), and M. Quatremère de Quincy, in his last archæological dissertation, taking into consideration only the exterior of this monument, have mentioned the first four sculptors, and have not spoken of Praxiteles ; but Vitruvius informs us that the interior sculptures were from the chisel of that celebrated artist.

The city of Halicarnassus, celebrated as the birthplace of

Herodotus, where this monument was erected, formed a sort of amphitheatre, sloping downwards from the summit of a hill, to the sea which washed its walls. The most elevated part was occupied by the citadel and the temple, dedicated to the god Mars; the lower part, extending to the port, formed a public square. On the top of the hill was also a palace, the walls of which, built of brick, were covered with marble from Proconesus. It was in the lower part of the amphitheatre that the queen Artemisia, inconsolable for the loss of Mausolus, erected his magnificent tomb.

According to Pliny, this building was 411 Roman feet in circumference, and 25 cubits high. It was composed of two principal parts of equal height, formed by a massive square platform supporting an Ionic colonnade, and by a pyramidal building of 24 cubits high, surmounted by a quadriga, or chariot. In the restoration of the building, which has been made by M. Quatremère from the designs of M. Hugot, there is a large massive square platform, on which is raised the stylobate which bears the colonnade. The latter is surmounted by a frieze, a cornice, with statues on the crown-work (*couronnement*), and ornamented with the groups of Dioscures at the angles of the front of the monument, and with the trophies at those of the stylobate. About seventeen years after the consecration of this monument, the city was taken by Alexander, who only preserved the temple and other public monuments. The tomb of Mausolus, which was then just completed, was also spared by this prince; for Pausanias says, several centuries afterwards: "The monument of Mausolus was so large, and so remarkable in all its parts, that the Romans, struck with admiration, called their most magnificent monuments *mausoleums*." From the age of Alexander to the eleventh century of the Christian era, the monument was exempt from the thefts that were often committed in ancient tombs. One hundred years later, Eustathius of Constantinople wrote: "Amongst the ancients, great attention was paid to the construction of tombs, and large sums were expended on them. That of Mausolus, a very magnificent work, and executed with infinite skill, was, *and still is*, an object of admiration." But, at the beginning of the fifteenth century, in 1404, the city of Halicarnassus was taken by the knights templars, who fortified the place against the Turks by raising constructions on the ancient monuments; which afterwards caused the total destruction of the tomb of Mausolus.

Claude Guichard, an author of the sixteenth century, has left a very rare and curious work, entitled *Funérailles et Manières diverses d'ensevelir les Anciens*, in which he gives the history, and almost the *procès verbal*, of the destruction of this precious monument. M. de Sainte Croix, in an excellent memoir on

the tomb of Mausolus, inserted in vol. xi. of the *Mémoires de l'Académie des Inscriptions*, elucidates and comments upon certain passages of this work. Guichard, who wrote in 1573, and who was an eyewitness of what he relates, after having told that, in 1522, the knights, in order to fortify the castle of Halicarnassus, hollowed the ground (*creusèrent*) near the tomb, adds the following curious and melancholy details which will complete the history and description of the tomb of Mausolus.

.... "At the end of five or six days, they made a great discovery : one afternoon, they saw an opening, like the entrance to a cellar. They took a light, and descended into it, where they found a large beautiful square apartment, adorned all round with pillars of marble, with their bases, capitals, architraves, friezes, and cornices cut in *bas-relief*. This must have been the sepulchral chamber, all the sculptures in which were by Phidias. The spaces between the pillars were filled with panels ornamented with fillets and mouldings, and sculptures of different-coloured marbles, corresponding with the rest of the building; the panels being neatly inlaid on the white ground of the wall, where nothing was to be seen but histories and battles sculptured in *bas-relief*. After having looked at and admired the singularity of the work, they pulled down, broke, and destroyed it, in order to make use of the materials, as they had done with the part that remained standing above ground (that is to say, to use them for stone and plaster). Besides this apartment, they afterwards found a very low door, which led to another room like an antechamber, in which was a tomb, or sarcophagus, with its vase and lid of white marble, quite perfect, and shining beautifully, which they did not uncover, from want of time, the retreat having already sounded. Thus, this magnificent tomb, reckoned one of the seven wonders of the world, after having escaped the fury of the barbarians, and stood during the space of 2247 years (M. de Sainte Croix here, with justice, corrects Claude Guichard, who is mistaken in about four centuries), was discovered, and demolished to repair the Castle of St. Peter, by the knights of Rhodes, who were immediately driven out from that citadel by the Turks, and soon after from all Asia."

ART. IV. *Hints on Construction: addressed to Architectural Students.*
By GEORGE GODWIN, Jun., F.S.A. and M.I.A.

NO. 2. FOUNDATIONS. (*Continued from p. 255.*)

"Certamente è bisogna sì in tutto lo edificio, sì principalmente ancora in essi fondamenti, non si far beffe di cosa alcuna, nella quale si possa desiderare la ragione e la diligenza d' un' accurato e circospetto edificatore."—*Alberti*.

THE reintroduction of concreted masses, or, to use the special appellation of one particular formation of this kind, *concrete*, as

a material in construction, is of recent date; although it was used both by the ancient architects and by those of the middle ages, and is to be seen in almost every part of the world, enduring to this day. Ralph Walker, Esq., and Sir Robert Smirke*, were among the first, if they were not *the* first, who employed it, and advocated its use in England, and, for so doing, deserve the thanks of all who are interested in the matter; “as which of us are not?” We will not, however, in this place descant upon its history or excellence, but confine ourselves to a description of the ordinary mode of preparing and applying it.

The fittest materials that can be employed in its composition are, Thames ballast (the best is found between London Bridge and Westminster Bridge, and is of a black colour) and Dorking stone-lime, finely ground or pounded, mixed in the proportion of one part of pounded lime by measure, and seven parts of ballast. The ballast should itself consist of two parts stones and one part sand; but a less preponderance of stones, rather than greater, is to be preferred: in which latter case, however, the quantity of lime may with propriety be increased, as the sand and lime should always be relatively apportioned in order to form a good concrete.

Repeated experiments have shown us that excellent concrete may be made with one part of strong well-burnt lime, and eight, or even nine, parts of ballast; but, as lime varies in goodness, and as the quantity of sand in the Thames ballast usually exceeds the proportion mentioned, we prefer, as a general rule, to use one of the former to seven of the latter.

Seven barrow-loads of ballast, then, being formed into a flat bed on the ground, one barrow-load of pounded lime is sprinkled over it with a spade by a labourer, while others turn over the ballast, and thoroughly wet the mass with water; the object being to slake the whole of the lime, and effect a perfect admixture of the two materials. One great point to be aimed at in the preparation of concrete is entire consolidation: to attain which, variety of size in the ballast used is essential, in order that the interstices necessarily occurring between the larger stones composing it may be filled by the smaller ones; and that the sand and lime, forming mortar, should occupy those cavities still remaining, and thus form the whole into a solid mass of flint. To this end, then, it is necessary the concrete should be turned over several times, while it is in a fluid state, if we may so speak; but this should be done with great promptness, in order that the

* The name of this distinguished architect, in connexion with the reintroduction of concrete, was omitted, through want of positive information, in the essay on that subject printed in the *Transactions of the Institute of British Architects*; and the author of it seizes the opportunity here offered to rectify the error.

composition may not set before it be put into the foundation, as any dislocation, or even disturbance, after it is once set, tends to lessen its goodness. It is expedient also, in another point of view, that concrete should be thoroughly turned over and mixed before using it, insomuch as the induration of all calcareous cements depends on the absorption of carbonic acid gas from the atmosphere, or otherwise; and, by thus bringing every particle of the lime in the concrete into contact, for a short space of time, with the atmosphere, the composition, when thrown into its destined situation, will harden more quickly than would otherwise have been the case. Of the rationale of these effects we shall speak hereafter, when treating of mortars and cements.

In regard to the quantity of water to be used for the preparation of concrete, opinions differ; and, although we are disposed to say that no more water need be employed than is found requisite thoroughly to wet the whole mass and slake the lime, we believe that very much more may be introduced without any other ill effect than this; namely, that, as the concrete so made will not set so quickly as it otherwise would, delay may be caused. During the formation of a concrete substratum beneath the national schools in St. Martin's parish, the main water-pipe burst, and, while the concrete was yet fluid, the contents overflowed it. As this happened on a Saturday evening, the water was not pumped out until the following Monday, and the mass was therefore perfectly saturated; notwithstanding which, or, as some thought, in consequence of which, when workmen attempted to cut through this, a short time afterwards, in order to make a drain, they found it almost impenetrable by their tools: it was a solid rock.

When the composition is thoroughly mixed, it should be immediately shoveled into barrows, wheeled up a platform so erected as to give a fall of at least 7 ft., and forthwith discharged into the excavation prepared for it, the fall assisting mechanically the solidification of the mass. In cases where the foundation is tolerably good, and concrete is put into shallow trenches for the walls merely, it is generally found necessary to level it down with a spade after it is thrown in: indeed, it can hardly be avoided. This certainly tends, however, to lessen its excellence; and, when a solid substratum is to be formed on the whole site of the intended building, or the concrete is otherwise put in in large masses, this should not be permitted (except to form a level surface at the top), but each barrow-load should be allowed to remain undisturbed where it first falls.

One barrow-load of concrete should not immediately follow another on the same spot. The whole site to be filled in with the composition should receive one layer previously to the commencement of a second in any one place; by which mode of proceeding not merely are upright breaks through the whole thickness

of the substratum prevented, but the induration of the mass is assisted.

The use of perfectly fresh lime for the preparation of concrete should be strictly enforced. By exposure to the air, lime becomes deteriorated, and the goodness of concrete afterwards composed of it would, of course, be interfered with. Ground lime, as obtained from the merchants, is to be viewed with suspicion, insomuch as (to say nothing of the difficulty of discovering, after it is ground, whether the whole of it was thoroughly burnt) all the lime which slakes upon the premises by exposure to the weather is, in many lime-yards, thrown into the mill; and, even where this is not the case, the lime often remains so long in the mill, exposed to the air, before it is wanted, as to lose all its goodness, and become mere pounded chalk. When it is important, therefore, that the concrete should be of the best description, and you are unacquainted with the lime merchant, the lime should be brought on to the premises in lumps (as for mortar), and ground or pounded there; and, in this latter case, it must be afterwards passed through a fine sieve: otherwise, the unburnt and ill-burnt lime (which is harder than that which is well burnt) remains in lumps; and as these, when made into concrete, do not slake readily, oftentimes not until the rest of the mass is set, the concrete is injured; for, in slaking, lime *expands*, and, in so doing, has, of course, a tendency to split or rend that which confines it.

We may add, as bearing upon this part of the subject, that, if no perceptible heat be evolved by the concrete in setting, one may be sure that the lime was stale and unfit for use.

We have spoken above of the ordinary, and perhaps the best, materials for forming an artificial substratum; but circumstances would often preclude their use, or render it inexpedient, and others must necessarily then be sought. The silt of most rivers, if free from clayey particles and dirt, or the stones from the sea side, mixed with a proper quantity of sand, will make excellent concrete with lime. Gravel may often be dug on the premises, sufficiently free from dirt to form, when concreted by lime, a good substratum for ordinary purposes, taking care, however, to add sharp sand, if the proportion which that material bears in it to the stones be less than we have said it should be, or to increase the quantity of lime if it be greater. The refuse of a brick-field, provided variety of size in the pieces be attained, may, with sand and lime, be advantageously used for the purpose in the absence of Thames ballast, although it seems certain that there will be the same difference between two masses of concrete, one of which is prepared of Thames ballast (which is all flint), and the other of the former material, as there is between a brick and a stone.

We have lately seen concrete formed partly of ballast and partly of strong brick earth, burnt on the spot for the purpose. The earth (which came out of the excavation made for the intended building) was piled upon a bed of faggots prepared to receive it, and was intermixed with a small quantity of breeze. After it was burnt, it had the appearance of slag; and, on being broken into small pieces, none of them so large as a fist, was wheeled away for use. The cost of burning and preparing it, independently of the digging in the first instance, was said to be about tenpence per yard cube; and, as Thames ballast costs usually, at the water side, 1*s.* 2*d.* per yard, and the expense of carting it to this particular spot was as much more, a great saving was effected by using the earth. In this case, as in others, however, if, when the ballast and the burnt earth be mixed, the proportion which the stones and lumps of brick bear to the sand in it be more than as 2 to 1, a proper quantity of this latter should be added; or (better still, perhaps, under some circumstances) a portion of the burnt clay, properly selected, might be ground, and used in the place of sand.

The cost of a cubic yard of concrete, as it is ordinarily prepared, allowing for the contractor's profit, is about 6*s.* 6*d.* in the neighbourhood of London, and may be calculated thus. It is now well known that seven yards of Thames ballast, and one yard of pounded lime, when wetted and mixed, will not form eight yards of concrete, in consequence of the intimate connexion of the materials which is induced by the admixture, or, in other words, of the solidification which is effected. The loss of bulk, according to various experiments, several times repeated, appears to be about one fifth of the quantity of the materials when separate; so that seven yards of ballast, and one yard of pounded lime, will not make more than 6½ yards of concrete. Now,

	£	s.	d.
Seven yards of Thames ballast cost, at the water's edge, about	-	0	8 2
Cartage, say	-	0	7 0
One yard of pounded Dorking lime, at the wharf	-	0	13 6
Cartage	-	0	1 0
Labour in preparing the concrete, and throwing it into the excavations, which operations should employ five men	-	0	7 0
Profit and use of scaffolding (15 per cent)	-	0	5 6
		<hr/>	<hr/>
		2	2 2

Therefore 6½ yards of concrete cost about 2*l.* 2*s.* 2*d.*, being at the rate of 6*s.* 6*d.* per yard. A cubic yard of stock brickwork, properly executed, costs about 20*s.* So that, as we said in our former paper on this subject, a concrete substratum might be laid, in many instances, under the walls of common dwelling-houses (whereby the possibility of disruption, through

the unequal settlement of the walls, is materially lessened, if not entirely removed, without any additional expense; insomuch as the cost of brickwork rendered unnecessary, even if the quantity were much less than that of the concrete introduced, would counterbalance the cost of the latter. In preparing a specification of the various works to be done in the erection of such a building, the following sentences with regard to the proposed substratum of concrete, to follow the directions to the excavator, would, perhaps, be sufficient:—"Form concrete foundation for all external and internal walls, chimneys, and partitions, 1 ft. thick, and 18 in. wider, in all cases, than brick footings, composed of Thames ballast" (or otherwise, as the case may be); "and fresh well-burnt Dorking lime, mixed according to the architect's directions, in the proportion of 1 of lime, when ground, and 7 of ballast, and thrown into the trenches, from a stage 7 ft. high, in two layers, each 6 in. thick. Note.—The lime is to be ground, or pounded and sifted, on the premises; and the ballast is to be of approved quality."

In the preparation of foundations for buildings of large size, when the bottom is bad, Yorkshire stone landings are sometimes laid on the top of the artificial substratum in the line of the walls (further connected by means of a chain bond of iron let into the landings throughout the whole extent); and on these the superstructure is commenced. Except, however, under the circumstances mentioned, we should place so much dependence on a mass of concrete occupying the whole site of the building, provided it were properly prepared, as to deem this precaution almost needless. We may notice that, when the iron chain bond is used, it should be so arranged as to prevent the expansion or contraction of the metal (which *might* be effected by changes of temperature) from injuring the stability of the building.

Concrete may be advantageously used for underpinning and securing old foundations; and we will mention one instance in which we have recently so employed it. The party wall of a house in the neighbourhood of St. Martin's Lane, built upon a very unstable bottom, suddenly sank down after having been erected many years, so much so, indeed, as to rend asunder the stone sill in the front windows, and threaten danger to the inhabitants. On digging out the soil down to the footings of the wall, the ground on which it was erected was found to be exceedingly unsound, having been, apparently, the site of several cesspools. Strong needles of oak were then passed through the wall, in order to support it; the ground was taken from under the footings to a depth of nearly 3 ft.; and a mass of concrete, composed of Thames ballast and Dorking lime in the manner above described, was rammed in (a fall not being attainable), so as to occupy the

whole space excavated, to within a few inches of the bottom course of the brick footings. On the top of this mass, and beneath the wall, a tier of Yorkshire stone landings was laid, which was closely wedged up with pieces of slate to the under side of the wall. The various fractures caused by the settlement were afterwards repaired, and the whole now remains perfectly sound.

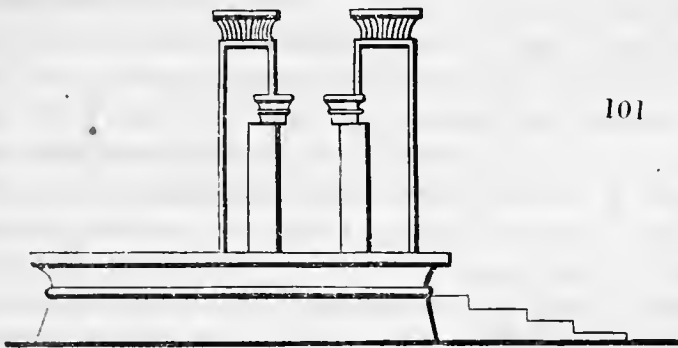
REVIEWS.

ART. I. *Manners and Customs of the ancient Egyptians ; including their private Life, Government, Laws, Arts, Manufactures, Religion, and early History ; derived from a Comparison of the Paintings, Sculptures, and Monuments, still existing, with the Accounts of ancient Authors. Illustrated by Drawings of those Subjects.* By J. G. Wilkinson, F.R.S., M.R.S.L., &c., Author of "A General View of Egypt, and Topography of Thebes," &c. 3 vols. 8vo, numerous cuts and plates, plain and coloured. London, 1837.

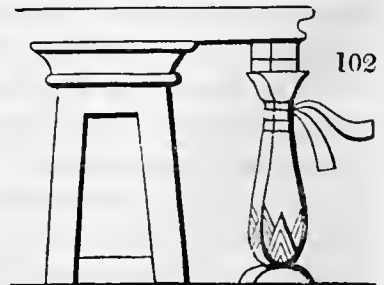
THIS work may be considered as the most complete account of ancient Egypt that has yet been published. The author has devoted the best part of his life to the study of Egyptian antiquities in their native localities ; and he is still engaged in the same pursuit. It is difficult to conceive a person who takes any interest in the past, who would not be delighted with the perusal of these volumes ; and to many they will be highly instructive, as showing in what an advanced state all the arts which are necessary for human subsistence were, upwards of fifteen centuries before the commencement of our era. The work will be particularly instructive to architects who take an interest in the antiquity of their art. They will here find that the construction of arches, which some suppose to have been unknown to the Greeks, and invented by the Romans, was practised in Thebes in the year 1500 B. c. They will find the origin of the Doric order in a depressed lotus flower ; and see, in the numerous engravings of household furniture with which this work is illustrated, the types of many of the beautiful chairs and other cabinet and upholstery articles that enrich the work of the late Thomas Hope, and which, at the time it was published, greatly improved the taste of this country in these matters.

The houses in Egyptian towns, in ancient times, were generally small and low, as at present ; but in Thebes some of them were four and five stories high. The streets were narrow, and, in towns built at the mouths of mountain ravines, the main street was at the same time the bed of the torrent, as is sometimes the case in Spain and Italy at the present day. In general, all buildings were constructed of crude unburnt brick, with the exception of the temples, which were of stone. The manufacture

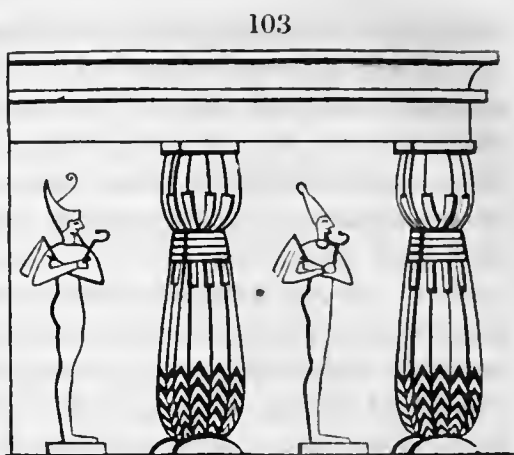
of brick is supposed to have been a government monopoly, and the bricks in ancient ruins are consequently generally found stamped with the seal of the king. Hence, the government captives were employed in brick-making; and, though the sculptures at present existing do not represent the Hebrews engaged in the operation of brick-making, because the remains in that part of Egypt where they lived have not been preserved, yet it is curious, Mr. Wilkinson observes, “to discover other foreign captives occupied in the same manner, overlooked by similar task-masters, and performing the very same labours, as the Israelites described in the *Bible*; and no one can look at the paintings of Thebes, representing brick-makers, without a feeling of the highest interest.” (Vol. ii. p. 98.) Small houses were usually connected together, so as to form the continuous sides of streets: they seldom exceeded two stories, and generally consisted only of a ground floor and an upper set of rooms. The houses of the rich citizens “frequently covered a considerable space, and presented to the street either the sides of the house itself, or the walls of the court attached to it. Their plans were regular, the rooms being usually arranged round an open area, or on each side of a long passage, to which an entrance-court led from the street. The court was an empty space, considerably larger than the Roman impluvium, probably paved with stone, or containing a few trees, a small tank, or a fountain in its centre; and sometimes, though rarely, a flight of steps led to the main entrance



from without. (See *fig.* 101.) A court is frequently common to several houses; and, again, some of the large mansions stood detached, and had the advantage of several doors of entrance, on two or three different sides. They had a portico, or porch, before the front door (*janua*), supported on two columns, below the capitals of which were attached (see *fig.* 102.) ribands or banners; the name of the person who lived there being occasionally painted within and on the lintel or imposts of the door, as in *fig.* 104.; and sometimes the portico

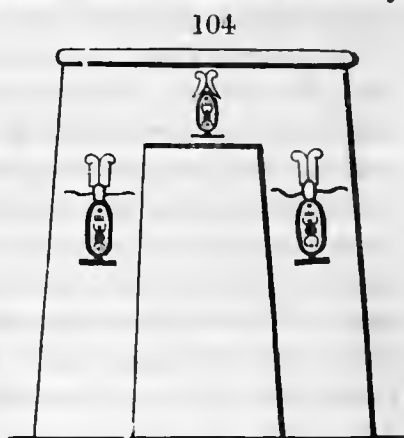


consisted of a double row of columns, between which stood colossal statues of the king. (See *fig. 103.*) A line of trees ran parallel with the front of the house; and, to prevent injuries from cattle or from any accident, the stems were surrounded by a low wall, pierced with square holes to admit the air." — (Vol. ii. p. 103.)



We refer to the work itself for a number of other details respecting Egyptian houses, most of which are illustrated by ground plans, elevations, &c.

"Some small houses consisted merely of a court, and three or four store-rooms on the ground floor, with a single chamber above, to which a flight of steps led from the court;" resembling some houses still found in *Felláh* villages of modern Egypt. A model of a house of this kind is now in the British Museum. The chamber on the top appears to have been intended as a shelter from



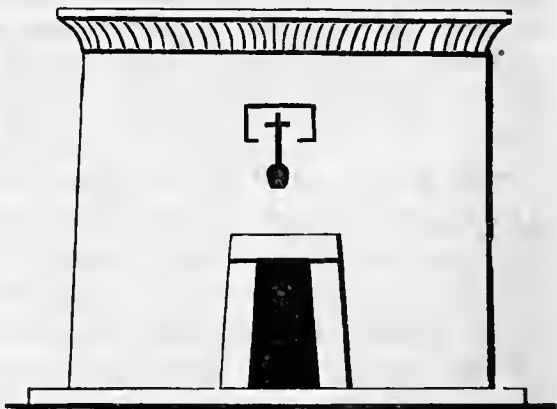
the sun during the day, for the inmate to superintend the business of the servants in the room below. "It cannot, however," says Mr. Wilkinson, "fail to call to mind the memorable proverb, 'It is better to dwell in the corner of the house top, than with a brawling woman in a wide house.'" (*Ibid.*, p. 108.) The resemblance between these houses of Egypt and those of Pompeii will strike every reader who has seen the latter city. The doors of these commoner houses turned on pins, one inserted in the lintel, and the other in the sill; but larger houses had folding doors, with bolts in the centres and cross bars. In many instances, they had wooden locks, which appear to have been opened by keys furnished with several fixed pins, answering to a similar number of pins, that fall down into the hollow movable tongue, into which the key is introduced; a practice common in Egypt in the present day. Formerly, as at present, the locks were occasionally sealed with a mass of clay, for greater security. (p. 111.) The floors of the houses were sometimes of stone, or a composition of lime and other materials; and the roofs of the rooms were supported by rafters of the date tree, arranged close together, or at some distance, and covered with palm branches. Many roofs were vaulted,

and built, like the rest of the house, of crude brick. (p. 116.) There is reason to believe that some roofs, in the larger houses, were arched with stone. "At Sâggara, a stone arch still exists of the time of the second Psammeticus, and consequently erected 600 years before our era; nor can any one, who sees the style of its construction, for one moment doubt that the Egyptians had been long accustomed to the erection of stone vaults."

It is highly probable that the small quantity of wood in Egypt, and the consequent expense of this kind of roofing, led to the invention of the arch: it was evidently used in their tombs, as early as the commencement of the 18th dynasty, or about the year 1540 B. C.; and, judging from some of the drawings at Beni Hassan, it seems to have been known in the time of the first Osirtasen, whom Mr. Wilkinson supposes "to have been contemporary with Joseph." (p. 117.)

On the top of larger houses there was frequently a terrace with a roof supported on columns, and open on every side, which served as a place of exercise during the heat of the day, and for sleeping in at night, during the summer season. Sometimes a mosquito net was passed through the columns. Instead of a terrace, a wind conductor was sometimes substituted in the upper chambers; a practice common in the East in the present day. This wind conductor is a funnel formed of boards, with its wide end open to the wind, through which a constant stream passed down to the apartment.* In smaller houses, reeds or

105



mats, covered with stucco, protected and supported by wooden rafters, supply the place of boards in the construction of the mulgufs of modern Egypt. Some houses had a tower, and in others the roof was surrounded with a row of battlements, as in *fig.* 106. "Besides the owner's name, they sometimes wrote a lucky sentence over the entrance of the house, for a favourable omen. (See *fig.* 105.) The lintels and imposts of the doors in royal mansions were frequently covered with hieroglyphics." (p. 124.)

* Some contrivance of this kind (the air, in winter, to be forced over a heated surface, or through hot water; and, in summer, through cold underground flues, or through cold water) will probably ultimately be resorted to in this country, when open fireplaces give way to close stoves, such as those of Arnott. As the wind, however, does not blow with much force more than half the number of days in a year, there would require to be some description of machinery to impel a fan in calm weather.

The walls and the ceilings of the houses were richly painted, as were the sculptures on the walls of the temples, and all the architectural details; a practice common to the Egyptians, the Etrurians, and the Greeks. (See vol. iii. p. 298.)

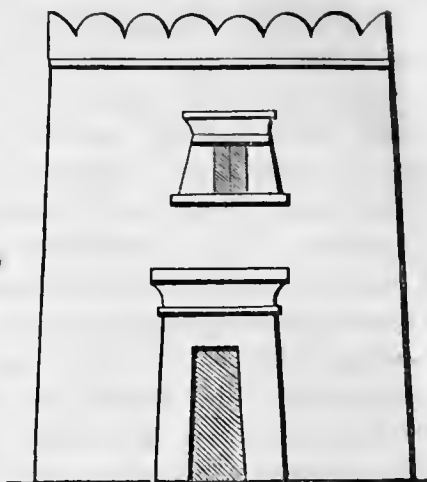
"It sometimes happened that the columns were merely covered with white stucco, without any ornament, and even within the usual line of hieroglyphics; and the same custom of coating certain kinds of stone with stucco was common in Greece. The Egyptians always put this layer of stucco, or paint, over stone, whatever its quality might be; and we are surprised to find the beautiful granite of obelisks and other monuments concealed in a similar manner; the sculptures engraved upon them being also tinted either green, blue, red, or other colour, and frequently one and the same throughout.

"Whenever they employed sandstone, it was absolutely necessary to cover it with a surface of a smoother and less absorbent nature, to prevent the colour being too readily imbibed by so porous a stone; and a coat of calcareous composition was laid on before the paint was applied. When the subject was sculptured, either in relief or intaglio, the stone was coated, after the figures were cut, with the same substance, to receive the final colouring; and it had the additional advantage of enabling the artist to finish the figures and other objects with a precision and delicacy in vain to be expected on the rough and absorbent surface of sandstone.

"The Egyptians mixed their paint with water; and it is probable that a little portion of gum was sometimes added to render it more tenacious and adhesive. In most instances, we find red, green, and blue adopted; a union which, for all subjects, and in all parts of Egypt, was a particular favourite: when black was introduced, yellow was added, to counteract or harmonise with it; and, in like manner, they sought for every hue its congenial companion." (Vol. iii. p. 301.)

The furniture of the Egyptians consisted of chairs and fauteuils, and occasionally of stools and low seats; but they did not recline upon diwáns, like Eastern people of the present day; nor did they, like the Romans, lie on a couch during meals; though couches and ottomans formed part of the furniture of the Egyptian saloon. They had double chairs for two persons, like the Greeks, and single chairs. *Fig. 107.* is one of the latter, from a painting in Thebes. *Figs. 108. and 109.* are chairs of an ordinary description. The seat of the lowest is only 8 in. high; the back, 1 ft. 4 in.; and the total height,

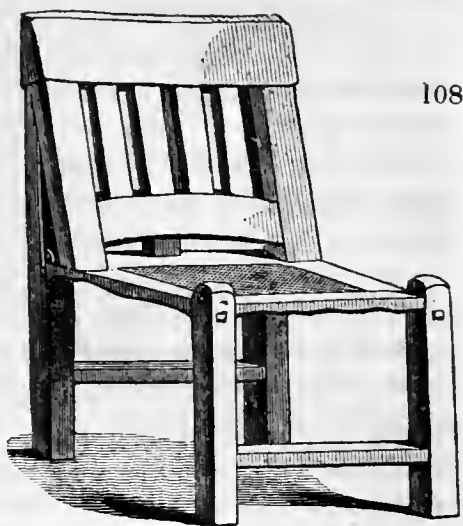
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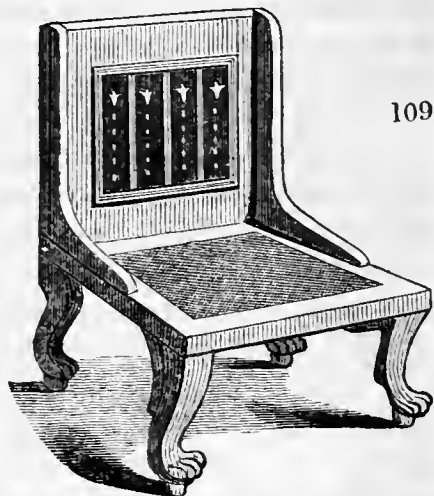
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2 ft. 6 in. The fauteuils were of a most elegant form, made of ebony and other rare woods, inlaid with ivory, covered with rich stuffs, and very similar to some now used in Europe, to which, indeed, they very frequently served as models. In proof of this, we may refer to Hope's work on furniture, and a corresponding work, published in Paris by Percier and Lafontaine. The expression endeavoured to be put in the feet of some of the chairs is worthy of notice, as in *fig.* 110. In the sculptures, a great variety of seats are exhibited, including camp-stools (*fig.* 111.), with or without pillows, and sometimes furnished with a leopard's skin, which is thrown over it when the chair is to be used, and removed when it is to be folded up. The seats of the chairs are frequently of leather painted, sometimes of cloth, and occasionally of network like our Indian cane chairs. Most of these seats were of the "ordinary height of those now used in Europe; the seat being nearly in a line with the bend of the knee; but some were very low, and others offered that variety of position which we seek in the kangaroo chairs of our own drawingrooms." (See *fig.* 113.)

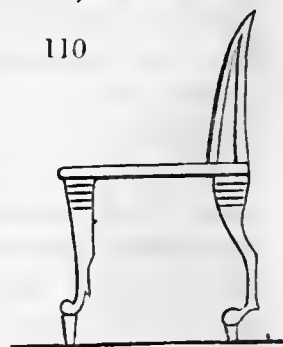


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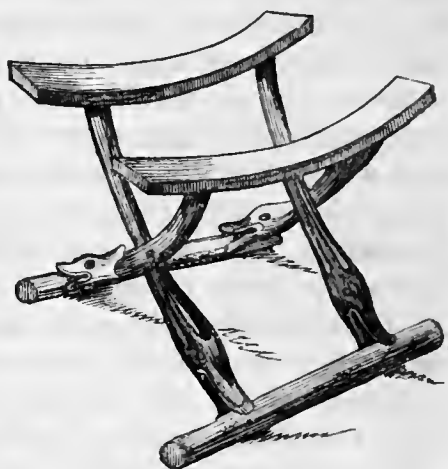
"The ordinary fashion of the legs was in imitation of those of some wild animal, as the lion, or the goat, but more usually the former; the foot raised and supported on a short pin, as in *fig.* 112.; and what is remarkable, the skill of their cabinet-makers, even in the early era of Joseph, had already done away with the necessity of uniting the legs with bars. Stools, however, and, more rarely, chairs, were occasionally made with these strengthening members, as is still the case in our own country; but the form of the drawingroom fauteuil and of the couch was not degraded by so unseemly and so unskilful a support. The back of the chair was equally light and strong. It was occasionally concave, like some Roman chairs, or the throne of Solomon, and in many of the large fauteuils a lion formed an arm at either side; but the back usually consisted of a single set of upright and cross bars, or of a frame, receding gradually, and terminating at its summit in a graceful curve, supported from without by



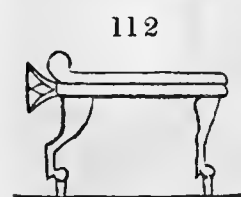
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perpendicular bars ; and over this was thrown a handsome pillow of coloured cotton, painted leather, or gold and silver tissue, like the beds at the feast of Alasuerus, mentioned in Esther ; or like the feather cushions covered with stuffs, and embroidered with silk threads of gold, in the palace of Scaurus." (Vol. ii. p. 196.)

The stools used in the saloon were of the same style and elegance as the chairs, as Mr. Wilkinson has shown by a number of engravings. The ottomans were simple square sofas, without backs. They had footstools, also, richly covered ; and, probably, as appears by some of the sculptures, carpets, or at all events mats. Their couches were sometimes lofty, and were ascended to by steps. They appear to have been used to sleep upon at night, and to have been transformed to an ornamental piece of furniture in the daytime ; a practice common in the East in the



111

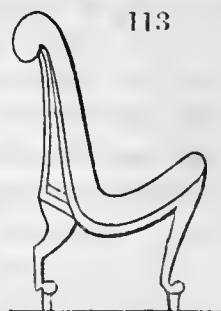


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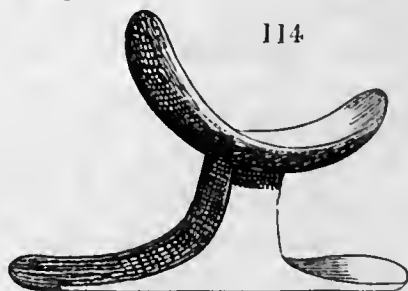
present day. The Egyptian tables were round, square, or oblong, supported by several legs, or by one leg in the centre, like the *monopodium* of the Romans. Little is known

of the furniture of the Egyptian bed-rooms ; but they contained one remarkable piece of furniture, not in use any where in modern

times ; viz. a wooden pillow, formed of a half cylinder of well-polished wood, supported by a shaft, as in fig. 114. Their bedsteads were made of wickerwork, having the external appearance of a pail-lasse, and were used by the priests and by the middle and lower classes, with or without different descriptions of bed-furniture. They had wooden, and probably also bronze, bedsteads.



113



114

The "carpenters and cabinet-makers were a very numerous class of workmen, and their occupations generally form one of the most important subjects in the paintings which represent the Egyptian trades." (Vol iii. p. 167.) The wood most generally employed was that of the Egyptian sycamore (*Ficus Sycómorus L.*), the date and dôm palms, the tamarisk, and some species of *Acàcia* or *Mimòsa*, more especially the *Mimòsa nilótica L.* (*Acàcia vèra Willd.*), of which there are large groves

still existing in the neighbourhood of Memphis and Abydos. The pods of this tree are used in tanning, and the gum is the gum Arabic of the shops. Both the ancient Egyptian and the modern Arabic name of this tree is *saul*. Many foreign woods were imported by the Egyptians, including deal and cedar from Syria; and ebony and other rare woods from Ethiopia, and various parts of Asia and Africa.

The principal tools made use of by the Egyptian carpenter were the more important of those in use in the present day; such as the axe, adze, handsaw, chisel, drill, planes of different sorts, files, ruler, plummet, right angle, &c. They understood dovetailing and tonguing, and also the union of boards by pins inserted in their edges.

We have already gone so much further than we originally intended in this work, that we must abruptly leave off, and recommend the volumes themselves to every architect who has any pretensions to be considered a man of taste. He will not only find them afford agreeable and instructive professional reading, but that they may be recurred to for ideas in designing furniture, and, again and again, as a work of entertainment, and, in short, of intense antiquarian interest.

ART. II. *An Historical Essay on Architecture*. By the late Thomas Hope. Illustrated from drawings made by him in Italy and Germany. Royal 8vo, 2d edition. London, 1835.

(Continued from p. 173.)

CHAP. XXVI. *Private defensive Architecture of the Ninth and Tenth Centuries*.

"It seems unfortunate, but it is not the less true, that the first rise and developement of Christianity, and the first general decline of arts, sciences, and civilisation, went almost hand in hand. About the close of the ninth century, besides devout exercises, there seemed to be no other business in the world but warfare. Every vassal was in open rebellion against his sovereign; every lord in constant hostility with all his neighbours. The country was infested by outlaws and plunderers; the towns distracted by contending factions. Nothing but its acknowledged holiness could protect any place, not fortified, against every species of violence and rapine. Every edifice, which was not a church, had no choice but to become a castle: not only insulated dwellings in the country, not only cities collectively, were fortified against attacks from without, but, in the very heart of those cities, men of property dared not go about the streets without being attended by an armed force; and fitted their habitations for standing a siege from their fellow-citizens. As in the country, a castle, so in every Italian city, a tower, became a badge of nobility. Even churches were sometimes fortified like citadels: that which, at Loretto, has been built over the Holy House seems to form part of the city bulwarks over which it soars.

"I need scarcely say, that if, in the architecture of churches and monasteries, ornament was sought, in these habitations, exposed to constant sieges, it was avoided, not only as in itself too delicate for the rough usage it might ex-

perience, but as calculated to render them too accessible. Except some loophole through which to pass a crossbow, or other offensive weapon, to a considerable height from the ground, all external projections to which a man might attach himself, all apertures through which he might effect a passage (save the low, small, intricate, well-guarded entrance), were carefully avoided : every where was a smooth even surface, only broken by the towers necessary, not only to watch with more effect the movements in the country around, but under the walls of the castle itself. The top of the edifice alone was fringed all round by immense brackets, supporting a projecting ledge, with perforations in its floor, through which stones might be dropped upon and made to harass the assailants at the foot of the wall, and encircled by battlements, behind which the defendants might, with safety to themselves, take aim at and send forth their arrows against the besiegers.

Chap. xxvii. *Lombard Civil Architecture.* The ground floor of the town halls consisted in an open portico, where venders of small wares took up their stations, and above which were rooms with ample windows, as in the Doge's Palace at Venice, the Palazzo Publico at Pavia, &c.

Chap. xxviii. *Allegorical and other ornamental Additions to Lombard Architecture.* The architects of the Greek churches ornamented them by colour, and those of the Latin churches by sculpture, which is found in the Lombard churches in profusion.

Chap. xxix. *On the Use of Brick.* Brick seems to be used in all alluvial countries, and very generally in Lombardy. The following excellent note on the subject of brick, the editor tells us, is extracted from a MS. work of the author : —

“ The ancient Greeks seem every where in their mother country, and their different later colonies to have found stone too plentifully to make great use of brick, though a few remains of terra-cotta cornices have been found in Greece, as well as terra-cotta vases and bas reliefs.

“ The ancient Romans, wherever they found clay more abundant or easier to work than stone, used it plentifully, both in regular layers throughout the body of walls, as we do, and in an external reticulated coating, from the fineness of its texture and the firmness of its joints as durable as stone itself. Indeed, far from considering brick only as a material fit for the coarsest and most indispensable groundwork of architecture, they regarded it as equally fit for all the elegancies of ornamental form ; all the details of rich architraves, capitals, friezes, cornices, and other embellishments. Sometimes it owed to the mould its various forms, and at others, as in the Amphitheatrum Castrense, and the temple of the god Ridiculus, to the chisel.

“ In modern Rome, too, very great use was made, until very late periods of brick. Of the famous Farnese palace, begun by Bramante and finished by Michael Angelo, the plain surfaces are of brick, so fine in its texture and so neat in its joints, that by the superficial observer it is generally taken for stone. The balustrades, the entablatures, and other raised parts, were cut out of the quarry afforded by the Coliseum. In the plains of Lombardy, where stone is rare, clay has, in buildings of importance, been moulded into forms so exquisite, as to have been raised into a material of value and dignity. In the ancient churches of Pavia, &c., it presents itself in all the delicate tracery of the middle ages ; in the great Hospital, Campo Santo and Castiglione Palace, at Milan, it exhibits the arabesque, medallions, and scroll-work of the cinque-cento style. On this side of the Alps, clay has never received forms quite so elaborate ; still, in the south of France, particularly at Tou-

louse, remarkable instances exist. Along the Rhone carved tiles are formed into very elegant cornices and balustrades. Even in England brick was in former days moulded into forms intended to be handsome. But, whether in consequence of the high duty imposed upon brick, and the consequent limitation as to size and shape, or from the influence of the contracting system of building, the legal English brick has become the least durable, and the most unsightly, of that used in any country; and has hence produced that dislike to its colour and material, which proceeds, not from its intrinsic ugliness, but from association of the imagination with ideas of coarseness and meanness of construction.

Chap. xxx. *Doors of Churches.* Among numerous short chapters, this is the shortest, consisting only of three sentences, and two of these very short. We mention this, lest our readers should be at a loss to account for our brevity in some instances, and length in others. Very few original doors of ancient churches exist; but there is one or two at Rome, and one at San Zeno at Verona.

Chap. xxxi. *A List of Churches in the Lombard Style which possess remarkable Features, on the Continent.* This list extends to a great number of towns in Italy, France, and Germany, and to some in England. The greater number of the plates by which the work is illustrated are elevations or views of the more remarkable churches named.

Chap. xxxii. *Some Account of the Characteristics of the pointed Style, and its universal Adoption accounted for by its peculiar Qualities.* Here the Gothic style is ably and elegantly depicted; but, after having, in preceding articles, given Dr. Anderson's *Essays on this Style*, we shall confine ourselves to a short extract from Mr. Hope's characteristics of it.

“ Those bold horizontal projections of entablatures and cornices, which, in the pure Grecian architecture, produced such play of upright outlines, and such masses of transverse shadows, had become in a great measure obliterated in the rounded Lombard buildings; but in this new pointed style, the few members, and fasciæ, and mouldings, and other parts still permitted to retain that horizontal and transverse position, which the whole system tended to obliterate, if external, were for the purpose of avoiding all lodgment of snow, and, if internal, for that of obviating all unnecessary weight and pressure, made in their projection as shallow and in their superior surface as much inclining downwards, as possible: and, to crown all, in those edifices in which the system was carried to its utmost consistency and completion, the roof, for the high pitch of which all the parts underneath were calculated, was made as steep and sharp as all the supporting members.

“ As the habit of gazing on peculiar forms by degrees begets a taste for them, and as those which utility first demands, even when that utility ceases, still are perpetuated by the inclination it produces; as even consistency and taste require the ornamental additions to harmonise in their outline and character with the fundamental groundwork, those essential forms, all slender, and tall, and sharp; those long thin pillars; those narrow and lofty interstices; those pointed arches, reduplicated laterally and over each other in endless repetitions, and intersecting each other in every way, were imitated and repeated, and carried to interminable, lesser, and more minute subdivisions in the mere ornamental parts, until at last, religious edifices, with their pinnacles, and spires, and broaches, and cusps, and corbels, and tabernacles, and

tracery, and ridge-bands, looked like a mass of network, or rather a cluster of mere conductors.

"As, in the seclusion of convents, mathematical science and mechanical combinations may advance, while art, especially of that sort which imitates and recombines the productions of nature, must experience an opposite and retrograde movement, not only the elegant arabesques and interlacings which the Lombard style still retained from the antique, which was little suited to the meagre upright angular framings of the new style, were discarded : but even where the foundation, or history of the edifices, required for its illustration, in the porches or other parts of the front, representations of single human figures on a large scale ; these figures, in order that they might be squeezed into the narrow bays and niches left between the pillars and mullions, were made so thin and wiredrawn, as to look like ghosts, or skeletons, or monsters ; witness those in the porches of Rheims, Paris, or Chartres cathedrals ; until, from the universal shaping of every part, this style of architecture seemed to admit of no exclusive appellation more appropriate and more descriptive of its grand general characteristic, than that of pointed ; however much, in process of time, it was influenced by that common tendency of all human things, after they have laboriously reached their apex, again to decline on the reverse side ; and after having attained the greatest sharpness, at last, as if weak with old age and sinking, it exhibited a depression in its arches, and even a bulging downwards in the form of pendants, ere it was completely overthrown and dissolved."

(*To be continued.*)

ART. III. *Selections and Fragments of the Architecture of the Middle Ages ; drawn from Nature and on Stone.* By Joseph Nash. Imperial folio.

THIS work comprises twenty-five of the most picturesque and interesting subjects, taken from various buildings, ecclesiastical and domestic, in England and on the Continent. Every one at all acquainted with architectural sketches is aware of the unrivalled excellence which Mr. Nash has attained in this department of art. These drawings, which are executed in a new and broad manner, technically called Hullmandell's new stump style, promise to form the most magnificent publication with which Mr. Nash's name is connected. We state this, having before us three specimen plates ; viz., the south porch of Louvier's Normandy ; the staircase in St. Maclou, Rouen ; and the screen in St. Jacques, Dieppe.

ART. IV. *Entwurf zur Boerse auf dem Adolphs-Platze in Hamburg.* Von A. de Châteauneuf. *Design for an Exchange adapted for Adolph's Square, Hamburg, &c.* Folio, 3 plates. Berlin, 1838.

OUR readers may recollect a notice published in our Fourth Volume, p. 149., respecting competition designs for building a new Exchange in Hamburg, the conditions of which were protested against by some of the principal architects of Germany. The design now published by M. Châteauneuf was made for the situation ; but, instead of being given in in competition, it

has been published by its author for his own gratification. The design is quite original, and, as the author has shown by his reasons for it, admirably adapted to the situation; but we shall not enter farther into the subject here, because we have translated the whole of the letterpress, and intend to give it, along with some copies of the engravings, in a future Number of this Magazine.

ART. V. *Catalogue of Works on Architecture, Building, and Furnishing, and on the Arts more immediately connected therewith, recently published.*

THE Plumber's, Painter's, Glazier's, House-Decorator's, &c., Pocket Director: comprehending select and useful Prices of the various Works in their respective Departments; including also a Variety of Information of practical Utility; with a copious List of the Trade. By John Bennett, Engineer, &c.

Considering the small quantity of matter in this little volume, it is certainly too dear.

Letter to His Grace the Duke of Hamilton, and the other Noblemen and Gentlemen, the Committee appointed by the Subscribers for a Monument in Edinburgh to the Memory of Sir Walter Scott. By Robert Cadell. Pamph. 8vo, 20 pages.

There appears to be a great diversity of taste among the citizens of Edinburgh on the subject of a proposed monument to Sir Walter Scott. We do not like the spirit of this pamphlet, in which the subject is not reasoned, but treated with a sort of party feeling and apparent illiberality, not, as we think, very creditable to its author. The design which gained the prize was produced by a carpenter; and it is objected to by the author of the pamphlet, among other reasons, because it emanates "from one unheard of as professional, and who can adduce no specimen of what he has done in architecture, not even the erection of a cow-house." Yet this design by the "unheard of" carpenter (Mr. Kemp), the author of the pamphlet subsequently acknowledges, was stated by Mr. Burn, "who ranks so deservedly high in his profession," to be the "best he had seen of the proposed monuments for Sir Walter Scott;" Mr. Burn adding that he thought "a Gothic erection was infinitely superior to anything Grecian." (p. 8.)

George Kemp, who sent in his design under the fictitious name of "John Morvo," is the son of a shepherd. He was put apprentice to a joiner near Edinburgh, and afterwards worked his way through England, and, in 1824, through a great part of France. Actuated solely by his wish of studying the beauties of the Gothic cathedrals in the countries he passed through.

Mr. Kemp is now employed in making drawings for a splendid work to be published at Edinburgh on the ancient Gothic buildings of Scotland, something in the manner of Britton's *Cathedral Antiquities*. Having had these advantages, Mr. Kemp, it will be evident, was as likely to produce an eligible design as any professional person whatever; and it is therefore in no way derogatory to the taste or judgment of the committee that they gave the journeyman carpenter the preference to the "professional" architects.

ART. VI. *Engravings.*

DESIGN for the new Exchange Buildings, Manchester. By T. Taylor, Architect.

Perhaps we shall be considered as fastidious when we say that we do not like this design: it is, in our opinion, without appropriate character. We have not seen the ground plan or any sections; but the perspective view before us shows two sides, in the centre of each of which there is a portico with a pediment mounted on an arcade; and at each of the angles there are smaller porticoes, without pediments. In the centre there is a lofty dome supported on columns. There is nothing in all this, or in the windows, to indicate the large room, which is the characteristic feature of an exchange, and nothing, in short, to assist us in conjecturing what it is.

A prospectus sent along with the drawing informs us that Mr. Taylor's plan "comprises an exchange (capable of accommodating 2000 persons), reading-rooms, post-office, chamber of commerce, Lloyd's rooms, brokers' offices, concert hall (sufficiently large for the festivals, and capable of contraction for smaller assemblages), library, exhibition and auction rooms, and having a large open area in the centre, with an arcade surrounding it. The basement would be well adapted for a coffee-room, or other purposes. The plans are so arranged, that, should the brokers' offices and Lloyd's rooms be considered unnecessary, a large hotel could be substituted, which would yield a good return for the money expended in its construction."

The Interior of the Chapter Room in the Cathedral of Bristol.
By John Willis.

A lithographic print, chiefly remarkable as exhibiting intersecting circular arches, which, according to some, gave rise to the pointed arch.

Blaise Hamlet. Published by Davy, Bristol.

Nine picturesque views of cottages on one plate, exhibiting considerable variety of outline. They are built round an open

green; and the designs were chiefly by the late Mr. Nash. They were built by the proprietor of Blaise Castle; and, while they form an ornament to his grounds, supply comfortable residences to his workmen. In 1816, when we last saw them, they were chiefly occupied by widows and decayed persons.

Henbury Cottages. Published by O. C. Lane, Clifton.

The Blaise cottages seen in groups, and forming very picturesque little pictures.

The Victoria Rooms, Bristol. Designed by S. G. Tovy, Bristol, and printed from wood by Messrs. Whitehead and Co., London.

This building is to contain a hall 115 ft. long by 55 ft. wide, and 46 ft. high. The entrance is by an immense portico supported by eight Corinthian columns; but, not having seen the plan, we cannot form an opinion as to its suitableness for the end in view; nor should we feel justified, from the perspective view before us, in repeating the praises of the *Bristol Mirror*, which finds this structure combining elegance with solidity.

Plan of the Gloucestershire Zoological, Botanical, and Horticultural Gardens, in the Park, Cheltenham. Designed by T. Billings. 1836.

On the supposition that the ground is perfectly flat, we should object to this design, that it is without a leading walk for making a general tour of the grounds. The walks are too like the trunks and ramifications of trees; and, with the exception of the central straight walk, there is not another on which a party could walk 100 yards without meeting with some kind of interruption, by the walk becoming suddenly narrower, or by some obstruction of a similar nature. However, as it would require a plan to point out clearly what we mean, we shall here make no further comment.

MISCELLANEOUS INTELLIGENCE.

ART. I. *General Notices.*

WHAT is Art? — Art is that process by which we give to natural materials the highest excellence they are capable of receiving.

We estimate the artist, not only in proportion to the success of his labours, but in proportion to the intellectual faculties which are necessary to that success. Thus, a watch by Breguet is a beautiful work of art, and so is a tragedy by Sophocles: the first is even more perfect of its kind than the last; but the tragedy requires higher intellectual faculties than the watch; and we esteem the tragedian above the watchmaker.

The excellence of art consists in the fitness of the object proposed with the means adopted. Art, carried to its perfection, would be the union of the most admirable object with the most admirable means; in other words, it would

require a greatness in the conception correspondent to the genius in the execution. But, as mechanical art is subjected to more definite and rigorous laws than intellectual art, so, in the latter, a comprehensive critic regards the symmetry of the whole with large indulgence towards blemishes in detail. We contemplate mechanical art with reference to its utility; intellectual art, with reference to its beauty. A single defect in a watch may suffice to destroy all the value of its construction; a single blemish in a tragedy may scarcely detract from its effect.

In regarding any work of art, we must first thoroughly acquaint ourselves with the object which the artist had in view. Were an antiquarian to set before us a drawing illustrative of the costume of the Jews in the time of Tiberius, we should do right to blame him if he presented to our eye goblets in the fashion of the fifteenth century; but when Leonardo da Vinci undertook the sublime and moving representation of the Last Supper, we feel that his object is not that of an antiquary; and we do not regard it as a blemish that the apostles are seated upright instead of being recumbent, and that the loaves of bread are those of an Italian baker. Perhaps, indeed, the picture affected the spectators the more sensibly from their familiarity with the details; and the effect of the art on the whole was only heightened by a departure from correctness in minutiae. So, in an anatomical drawing that professed to give the exact proportions of man, we might censure the designer, if the length of the limbs were disproportioned to the size of the trunk: but when the sculptor of the Apollo Belvedere desired to convey to the human eye the ideal of the God of Youth, the length of the limbs contributed to give an additional and superhuman lightness and elasticity to the form; and the excellence of the art was evinced and promoted by the sacrifice of mechanical accuracy in detail. It follows, therefore, that intellectual art and technical correctness are far from identical; that one is sometimes proved by the disdain of the other. And, as this makes the distinction between mechanical and intellectual art, so is the distinction remarkable in proportion as that intellectual art is exercised in the highest degree, in proportion as it realises the ideal; for the ideal consists not in the imitation, but the exaltation, of Nature; and we must accordingly enquire, not how far it resembles what we have seen, so much as how far it embodies what we can imagine.

It is not till we have had great pictures that we can lay down the rules of painting: it is not till we have had great writers in a particular department of intellect that we can sketch forth a code of laws for those who succeed them. For the theory of art resembles that of science: we must have data to proceed upon, and our inductions must be drawn from a vast store of experiments. (*Monthly Chronicle*, p. 43.)

Effect of Ornament according to its Disposition. — We do not dispute that, if minute ornaments or other parts are merely introduced in patches, they impart a littleness to what, but for them, might be grand; yet we also strenuously contend that, when spread over a vast extent of surface, and made to constitute ample masses, they become, as it were, the foliage of a majestic tree, and convey the idea of grandeur, power, and sublimity. In the Arabian style, as exemplified in the halls of Alhambra, the very multiplicity and excess of embellishment contribute to simplicity; the effect is one, undivided and impressive. We may note particulars afterwards, as leisurely as we please; but the first glance enables us to recognise the entire scheme; a scheme grasping countless myriads of forms, and uniting them into one perfectly methodised whole. The eye may be intoxicated by the light, but is, correctly speaking, no more bewildered than it would be by beholding an extensive prospect.

What, applied singly or sparingly, would be little, by force of numbers, like the leaves which go to make up the foliage of a widely spreading tree, becomes grand. Such an assemblage of parts, minute, perhaps trivial, in themselves, becomes a vast collected host, and carries with it an impression of infinity. The eye is neither wearied nor sated, because the spectator is left at liberty, either passively to enjoy the single impression resulting from such diversity and com-

plexity of parts, or to bestow his attention on any of the other circumstances and beauties which invite to examination. (*Printing Machine*, p. 126.)

Gothic Architecture according to Frederick Schlegel.—The taste of the middle ages, particularly in Germany, is nowhere so completely displayed as in those buildings that are built in what is called the Gothic style of architecture, the origin of which is not, however, properly known. It is now acknowledged that it did not arise among the Goths, but appeared much later, without variation, and all at once tolerably perfect. I speak of that style of architecture in Christendom, with its lofty ailes and arches, with its groups of pillars like bundles of reeds, its abundant leafy decorations, its ornaments of flowers and leaves sufficiently distinguished, which is totally different from that ancient style of architecture which is built in the modern Greek taste, from the model of the church of Sophia at Constantinople. There is very little or nothing of the Moorish style in it. Buildings in the Moorish style, in Sicily and Spain, have a very different character. Gothic buildings were found in the East, but they were built by Christians: they were fortresses and churches of knights templars, and the knights of St. John. This peculiar style of architecture was at its height in the twelfth, thirteenth, and fourteenth centuries. It flourished most in Germany, and from it the Germans formed the idea of the dome at Milan, which they erected to the no small astonishment of the Italians. But it not only flourished in high and low Germany, but even in England, and in the north-western parts of France. The invention of this style is unknown: it could not have been only one great architect, as his name would have been preserved. Those who planned such wonderful works seem rather to have belonged to a society composed of a certain number of members. Whoever they may have been, they have not merely heaped stones one on the other, but in their performances have left impressions of their exalted ideas. If such a magnificent building have no signification, it cannot be said to belong to this beautiful art. This ancient and most exalted of all the arts does not produce immediate excitement of the feelings. It is only from its meaning that it can produce a certain impression on the mind, and it is therefore sure to give rise to a lofty feeling of a very peculiar kind. All kinds of architecture are therefore symbolical, particularly those used by the Christians during the middle ages in Germany. The first and chief expression is that of the thoughts raised to God, and, separated from the earth, ascending boldly and straightly to Heaven. This is what every one must feel on contemplating the aspiring pillars, arches, and vaults, even if we cannot analyse this feeling. All the other parts of the whole are symbolical and significant, as many traces and proofs of it are to be found in the writings of those times. The altar was placed opposite the rising sun; the three principal entrances to receive the crowds of people from the different parts of the world. The three towers express the three persons of the mystery of the Godhead, according to the Christian belief. The choir raises itself, like a temple within a temple, with exalted dignity. The figure of the cross was used in the Christian churches from the remotest times, not merely arbitrarily, as it may be supposed, or that it should be considered as an object merely to attract the eye from the other beautiful forms, as all the selected forms (according with each other) form a complete whole. Round pillars were soon laid aside in Christian architecture; and, as it was found that three or four of such pillars, when placed close together, produced no good effect, they preferred those that were slender, like bundles of rods placed together, high aspiring light pillars, in all the plenitude of fulness and unity. The rose is the principal feature of all the ornaments of this style of architecture. The peculiar form of the windows, doors, and towers is derived from it, also the rich decorations of leaves and flowers. The cross and the rose are therefore the chief forms and symbols of this symbolical style of architecture. The expression of the whole is the solemnity of eternity, the thoughts of earthly death interwoven by the most enchanting plenitude of a life of perpetual bloom. (*Crelle's Baukunst.*)

Composition for rendering Buildings Fire-proof. — In a preceding Number (p. 85.), we noticed an experiment which had been made with this composition, at White Conduit House, in November, 1837; and, on June 6., we attended, by invitation, to witness another in Dorset Street, Clapham Road. The composition is of a greyish colour, and appears to consist of a metallic oxide, mixed with finely powdered flint glass. The house in which the experiment was tried was purposely left unfinished, without window-sashes, and with the walls bare; but the bond timber and stud-work of the partitions were, on this account, only the more exposed to the fire. These, and all the rest of the wood-work, were covered over with the composition, to the depth of, perhaps, the eighth of an inch; as was the entire surface of the ceilings, over which a coating of common plaster was laid. Some furniture was placed in the rooms, and the window openings were covered with wirework, to prevent the burning fuel from being blown out. The house consisted of six small rooms, which were fired one after the other; and in one, in particular, where there was an old carpenter's bench on fire, the heat was intense. The experiment may be considered as having terminated quite satisfactorily; the difficulty, however, concerning fire-proof buildings does not consist in devising a plan, but in getting persons to adopt it. One thing in favour of this composition is, that it becomes very hard when set, and takes a polish equal to that of the finest marble. — *Cond.*

Noxious Effluvia, and all kinds of atmospheric poisons, have lately been neutralised or destroyed by the evolution of chlorine gas, in a safe and expeditious manner, by a machine invented by a Mr. Watt. It has been tried in the presence of Mr. Faraday and Dr. Birkbeck. — *Cond.*

A general Slaughterhouse, to be erected near Smithfield, in which all the cattle brought to London should be killed, and, when this was done, they should be carried to their several owners, was proposed in the *Gentleman's Magazine*, so early as 1761, and even, as the editor tells us, frequently before. The magistrates, he says, were at that time considering how they might remedy the loss of life occasioned by the brutal behaviour of the cattle drivers. (*Gent. Mag.*, vol. xxxi. p. 205.)

ART. II. Foreign Notices.

NORWAY.

DWELLINGS of the Rural Population in Norway, as compared with those of Britain and Ireland. — The dwelling-houses of the meanest labourers in Norway are divided into several apartments, have wooden floors, and a sufficient number of good windows; also, some kind of outhouses for cattle and lumber. Whoever has observed the condition of our labouring population, will admit the influence of good habitations upon the moral habits of a people. The natives of New Zealand have dwellings more suited to the feelings and decencies of civilised life, than the peasantry of a great proportion of Great Britain and Ireland, who live in dark one-room hovels, in which not only household comfort and cleanliness are out of the question, but the proper separation of the sexes can scarcely be maintained. Can any reflecting person doubt that it is an important advantage to the labouring class of a country, that their standard of living is pitched high, as to lodging, food, and clothing? It is the most effective check on pauperism, and overpopulation. Why does the Irish peasant marry so recklessly? Because his idea of a suitable dwelling for a man in his station is a hovel of raw earth and sticks, such as a man may put up in a forenoon on a hill side; a bucketful of potatoes is his standard food; a tattered great coat his raiment. With these, he is in no worse condition than the population around him, and therefore he marries. If the ideas and habits of the country required a more expensive and comfortable sort of habitation for the very meanest person of his own station, he would not marry, until he had acquired the means of lodging like.

his neighbours; nor would he find a wife who would leave a decent habitation to burrow in a hole like a pigsty. (*Laing's Journ. of a Residence in Norway during 1834-5-6*; as quoted in the *Morn. Chron.*, Sept. 7. 1836.)

WALLACHIA.

A Wallachian village is the *ne plus ultra* of disgusting dirtiness and wretchedness, consisting of holes dug in the earth, over which a propped-up roof is thrown, covered rarely with straw, generally with turf. I never ventured into a peasant's dwelling. At the several stages I stopped at, I sometimes got out of the vehicle to enter the posting-house (generally the best house of the village), the interior of which I therefore know from personal inspection. Through a rough kind of door, I erept, stooping, down an excavation of some feet into the ground, the floor of which was neither paved nor boarded, but merely hardened by stamping. Above, were the rafters of the dwelling, in which an aperture covered with a pig's bladder represented the window. An angle of the space below served for the hearth, around which several postilions squatted in the manner of the Turks, smoking tobacco, and warming themselves by the fire. The smoke endeavoured to find vent at the sieve-like roof. There was no furniture visible. Along the wall ran a low, broad wooden stool, covered with a rush mat, which composed the trinity of bed, table, and seat; the postmaster (as dirty a fellow as his men), in Turkish costume, placed himself with crossed legs hereupon, drew writing apparatus from his girdle, with a pen cut from a reed, and scratched his necessary remarks in the dirty posting book. To get provisions in such a village is not only difficult, but almost impossible. (*St. Petersburg, Constantinople, and Napoli di Romania, in 1833 and 1834*; by M. Von Tietz, Prussian Counsellor of Legation: as quoted in the *Athenæum* for Aug. 13.)

NORTH AMERICA.

Philadelphia, April 17. 1838. — Dear Sir, I have taken the liberty to send you my several annual reports on the Girard College for Orphans, the proceedings on laying the corner-stone, the will and biography of Mr. Girard, and the public documents relating to the new treasury buildings at Washington, district of Columbia.

The annual reports are mere matter of form, and embrace very little information beyond an account of the expenditures. In the last report, however, you will find an experiment of some interest on the expansibility of iron embedded in walls. The account of the proceedings on laying the corner stone of the college embraces an elegant address delivered on the occasion by Mr. Biddle, the president of the United States Bank; also, an architectural description of the plan of the main building.

The pleasure I derive from the perusal of your interesting Magazine has prompted me to make thus free to address you. The high professional character that you have given to this excellent work affords peculiar gratification to your professional readers, while the pleasing variety that adorns its pages makes it one of the most agreeable journals of the day, to all classes of society.

Architecture, above all other professions, needs a work like this. The true source of the carelessness with which this, the noblest of all the arts of polished life, has been treated, is to be found in the want of a cultivation of the public taste. If the mass of the people were generally well informed on the subject of architecture, assuming pretenders would be frowned into oblivion, true genius would be fostered, and the nations would look to their architects, and not to their arms, for the means of handing down to ages yet unborn the story of their power and greatness.

Hence, it becomes the duty of the profession not only to elevate the standard of their art amongst themselves, but to take measures to impart such general information on the subject to the people as shall enable *them* to appreciate the works of architects, and to discriminate between the tasteful

and philosophical compositions of those who bring their mental energies to the work, and the crude and often gorgeous deformities of those who are governed by whim and caprice, and who are led altogether by impulse and accident.

No better means could possibly have been devised to accomplish so desirable an end, than the establishment of the *Architectural Magazine*. It now only remains for architects to make good use of it amongst their patrons, and the profession will naturally assume the elevated rank that belongs to it; while the brainless bunglers that now hang about it like a nightmare will sink away before the scrutinising eye of an enlightened people. — *T. N. Walter*.

[We are much gratified to find that the *Architectural Magazine*, and the object which we have in view in conducting that periodical, are duly appreciated in America. We have received all the books so kindly presented to us by our correspondent, and shall notice them duly on an early occasion. The duplicates we have, as requested, sent to the Institute. We shall be happy to hear from Mr. Walter as often as he has anything to communicate, and can find leisure to commit it to paper. — *Cond.*]

ART. III. *Domestic Notices.*

ENGLAND.

THE Squares of London. — The squares are another peculiarity of London. These are large open spaces, surrounded with houses, the centre being laid out as a garden, with grass-plots and parterres of flowers, shrubs, &c. These gardens, enclosed by iron railings, are kept in perfect order at the expense of the inhabitants of the squares, who alone have the use of them. Two of the principal, both for extent and the surrounding houses, are, Grosvenor Square and Belgrave Square, the last of which has been but lately built. Each of the four sides of this square is formed by a colossal edifice, which, on closer inspection, is found to consist of several distinct houses, which are only united architecturally in one mass. Such buildings are usually erected by one person, and by him let out; and are therefore in every respect similar to the buildings in ancient Rome, which were called islands. This method is resorted to in order to have grand masses of building worthy of such a city; an object which can scarcely be attained by the erection of single houses. Great buildings of this kind have, however, always one defect, which is, that the several divisions, the stories, doors, and windows, cannot be made in proportion to the entire mass, but must be accommodated to suit the separate habitations; by which they are made too small, and the whole easily assumes a barrack-like appearance. Seen at a distance, however, they have a good effect, as is proved by the terraces that bound some parts of the Regent's Park. These colossal proportions have been very judiciously chosen here, because, with the great extent of the park, even considerable buildings would be lost." — (*Waagen on Art and Artists in England*; as quoted in the *Athenæum*, Nov. 4. 1837).

Palace of the Duke of Sutherland. — I have now acquired an idea of the style and splendour of the residence of an English duke. Being furnished with two letters, by the favour of Her Royal Highness the Duchess of Cumberland and Her Royal Highness the Princess Louisa of Prussia, I waited upon the Duke of Sutherland. I was received in the kindest manner, and the duke himself showed me the principal parts of his house. By its extent, its noble proportions, the solidity of the materials (it being entirely built of hewn stone), and the beauty of the situation, it is superior to all the other mansions in London. Erected by the architect B. Wyatt, for the late Duke of York, it was purchased and finished, after the duke's death, by the late Marquis of Stafford, father of the present Duke of Sutherland. His Grace has, however, added a story to it. From the windows you enjoy a free beautiful view. From the one side you overlook the whole of the Green Park, and on the other St. James's Park, with lofty trees of the most luxuriant growth,

between which the towers of Westminster Abbey rise in the background. Yet the eye always returns to the interior of the apartments, where it is attracted by a variety of objects ; for, besides the niches and the splendour which the hangings, curtains, and furniture every where display, the more noble and refined enjoyment which works of art alone can afford is nowhere wanting. The marble chimney-pieces are adorned with small bronzes and elegant vessels after the most celebrated antiques. There are likewise some antique busts and bas-reliefs. But the chief ornaments are the paintings of the Italian, Flemish, Spanish, and modern English schools ; and the duke, who is one of the richest men in England, continues to add to the collection. A gallery, lighted from above, which he showed me in the new story, will contain, in a few years, the most valuable paintings. The duke, who in his youth resided a long time at the Prussian court, has preserved the recollection of that time, as appears from the portraits of many members of the royal family of Prussia, among which the most remarkable is the bust of the queen, executed in marble by Rauch, after his monument at Charlottenburg. On a later visit to Berlin, when I had an opportunity of showing to the Duke and Duchess of Sutherland a part of the King of Prussia's pictures from the Solly collection, he duly appreciated the versatile genius of Schinkel. The manner in which His Grace spoke of the elegance and richness of Schinkel's invention, convinced me that he is justly placed in the first rank of the present patrons of art in England. (*Ib.*)

London Street Houses. — All the new houses of any size are plastered or stuccoed. In the old houses, on the contrary, the bricks of which they are built are exposed ; though it is only for the first few years that you can distinguish their colour ; for the smoke of the coals soon draws its veil thicker and thicker over them, and covers them with that universal grey, which gives London such a monotonous and melancholy appearance. The outside of these brick houses is very plain, and has nothing agreeable in the architecture, unless it be the neat and well-defined joints of the brickwork. On the other hand, many of the great palace-like buildings are furnished with architectural decorations of all kinds, such as pillars, pilasters, &c. There are, however, two reasons why most of them have rather a disagreeable effect. In the first place, they are destitute of continuous simple main lines, which are indispensable in architecture to produce a grand total effect, and to which even the richest decorations must be strictly subordinate. Secondly, the decorative members are introduced in a manner entirely arbitrary, without any regard to their original meaning, or to the destination of the edifice. This absurdity is carried to the greatest excess in the use of columns ; these originally supporting members, which, placed in rows in the buildings of the ancients, produce the combined effect of a pierced wall which bounds one side of a space beyond, are here ranged, in numberless instances, as wholly unprofitable servants, directly before a wall. This censure applies in an especial manner to most of the works of the lately deceased architect Nash. In truth, he has a peculiar knack of depriving masses of considerable dimensions of all effect, by breaking them into a number of little projecting and receding parts ; but, in the use of the most diverse forms and ornaments, he is so arbitrary, that many of his buildings (for instance, the new palace of Buckingham House, and some in the neighbourhood of Waterloo Place), look as if some wicked magician had suddenly transformed some capricious stage scenery into solid reality. This architect is even more capricious in some of his churches ; for instance, All Souls, in Langham Place ; a circular building in two stories, with Ionic and Corinthian columns, surmounted by a pointed sugar-loaf. But what shall we say to the fact, that the English (who first made the rest of Europe acquainted with the immortal models of the noblest and chastest taste in architecture and sculpture of ancient Greece, in all their refinement) produced, when it was resolved, a few years ago, to erect a monument to the late Duke of York, nothing but a bad imitation of Trajan's pillar ? This kind of monument, we know, first came into use among the Romans,

a people who, in respect to the gift of invention in the arts, and in matters of taste, always appear, in comparison with the Greeks, as half barbarians. The very idea of isolating the column proves that the original destination, as the supporting member of a building, was wholly lost sight of: besides this, the statue placed on it, though as colossal as the size of the base will allow, must appear little and puppet-like; and the features, the expression of the countenance, the most important designations of the intellectual character of the person commemorated, are wholly lost to the spectator. In Trajan's pillar, the bas-reliefs on the shaft give at least the impression of a lavish profusion of art; but this Duke of York's column, with its naked shaft (which, besides has not the advantage of the entasis), has a very poor and mean appearance. If the immense sums expended in architectural enormities had always been applied in a proper manner, London must infallibly have been the handsomest city in the world: I must, however, add, that several buildings are honourable exceptions. Among the older ones, I would only mention Somerset House, which, by its simple proportions, corresponding with its great extent, produces the effect of a royal palace; and, of modern buildings, the new Post Office, built by the younger Smirke, the exterior and interior in the elegant Ionic order, has a noble effect. Amongst the most stately buildings at the west end of the town are the club-houses. Each of these houses has fine saloons for reading-rooms, and for a library, and also a complete culinary establishment. The whole arrangement is so extremely elegant, and they are such agreeable places of resort, that the ladies have reason on their side, when they vehemently declaim against these establishments, as taking the men away from their family circles. (*Ib.*)

A new Street is projected from Westminster Abbey to Pimlico, by Mr. Bardwell. Other great changes are contemplated in that quarter, including the erection of a market. — *G. Dec. 2. 1837.*

Improvements in the North-western Part of London. — Two new squares are now being formed on the west side of the Edgeware Road, on the large space of ground between the back of Oxford Terrace and Connaught Square. The one to the north of Burwood Place and St. John's Church is called Cambridge Square, that to the south Oxford Square. Another to the west of them is also commenced, termed Hyde Park Square; and the fine row of first-rate houses named Hyde Park Gardens, on the Uxbridge Road, facing the Park, are nearly finished. The Park itself has recently been much improved, by the judicious substitution of an iron railing for the long dead wall which constituted its northern boundary; by the erection of the Victoria Lodge and Gates, and by the formation of a broad gravel walk (with handsome and substantial iron guard-rail and posts) from Cumberland Gate to Kensington Gardens. — *G. B. W. London, Dec. 1. 1837.*

Specimens of painted Glass. — Those of your readers who are lovers of painted glass, I beg to refer to a specimen that may be seen at Brooks's glass repository, Strand, which is an admirable imitation of the window painted by Jervas, and designed by Sir J. Reynolds, in New College Chapel, Oxford.

In Russell's curiosity dealer's shop, King Street, Covent Garden, there is also a small painted window of the Crucifixion, which might form, in a larger one of the Gothic style, a very good centre-piece, with a border. It was no doubt the work of an old master; but, as I could not learn whence it is taken, his name is unknown to me. — *Frederick Lush. Nov. 30. 1837.*

LANCASHIRE. — *Liverpool Observatory.* — The report of the Dock Committee having been read, it was stated by the Mayor that, in consequence of the Dock Committee having rescinded their resolution to contribute towards the expense of establishing and maintaining an observatory, the town clerk required the instructions of the council as to a clause in the bill relating to the Borough Court, the observatory, and other subjects. The question was, whether the clause was to stand, as the council would have to bear the whole expense.

Mr. Lassel said they had voted three or four thousand pounds for the mere

taking away the corner of a street; and he trusted that this subject would not be lost sight of. He urged the necessity of an observatory for maritime purposes, and mentioned an instance that occurred the other day, in which two chronometer-makers had given different times, making a variation of sixty-seven miles in longitude.

Mr. Earle thought it quite lamentable that, in the present day, any argument should be necessary to show the expediency of building an observatory. One estate had 200,000*l.*, the other 100,000*l.*, a year, and yet they could not expend two or three thousand pounds for such a purpose as this. What was money for, if it were to lie in their coffers? If there were any motive of saving connected with the question, he could only apply the word contemptible to it.

Mr. Platt said that, if the act were obtained, it would not be necessary to follow it up immediately. It would be shameful, if in such a port as Liverpool they could not establish an observatory. It was an object of great importance: they would soon have a number of subscribers to support it, and ultimately it would turn out to be no expense to the corporation.

Mr. H. Hornby thought it incumbent on some members of the Dock Committee to state the grounds on which they had changed their opinion. He had not yet heard the slightest reason for it. It appeared to him perfectly obvious that this was an expenditure of money which would be more useful to the Dock estate than to the corporation. Surely, it was desirable for the interests of navigation that there should be the means of taking correct observations; and, in promoting mercantile interests, the prosperity of the Dock estate must be increased. They could not oblige the Dock Committee to undertake the expense; and, as the question was one of very great importance, which, if not undertaken now, would not be undertaken at all, he moved that the town clerk should take such steps as would enable the corporation to erect an observatory. Mr. Jordan seconded the motion; but, after a good deal of discussion, Mr. Currie having proposed that the subject should be postponed for the present, that proposition was carried by a considerable majority. (*Liverpool Mercury*, May 11.)

Watering Troughs for Cattle. — Mr. Platt presented the report of the committee, recommending the erection of two watering troughs for horses and cattle at the south end of the town. He stated that the cost of erecting the troughs would only be 65*l.*, and the annual outlay afterwards only 15*l.* a year each, and that the carters and owners of horses were most willing to contribute towards the expense. He moved that the report be confirmed, which, after some discussion, was done accordingly. (*Ib.*)

Manchester. — *Manchester Architectural Society's Conversazione.* — Mr. Parsey's Lecture. On March 7. the members of the Manchester Architectural Society held their periodical conversazione in the Society's rooms, Mosley Street, at which Mr. Parsey was present by invitation, and a good attendance of members. After the members had adjourned to the library, and Mr. A. Hall had taken the chair, they proceeded to the election of trustees to the Society, when the choice fell upon the following gentlemen: — Mr. Richard Lane, Mr. James Heywood, Mr. J. Fraser, Mr. George Peel, Mr. A. Hall, and Mr. James Adshead. Mr. Parsey of London was then called upon, and proceeded to deliver a short lecture on his new principles of perspective. In opening his address he said, —

That the problem of perspective has not been solved requires no argument, from the known existence of so many opinions on the subject. Opinion always implies doubt; and, where we find diversities of it, at most there can only be one in the right. The theory, as it has been promulgated, after the labour of its acquirement, has always left on the mind of the practitioner many questions of its truth. It is universally confessed that judgment disallows a strict adherence to its rules. To obviate any future conflict of opinion, the lovers of the fine arts, and the promoters of sound and useful

knowledge, must test the existing theories of vision by the unerring laws of nature, from whence only we can hope to discover a standard of taste. First, then, we must discover the laws of nature, whose unerring principles only can be the legitimate guide of practice. We must throw aside all prejudices, naturalised, as it were, by preceding custom ; and, for the sake of truth, and the happiness and fruitfulness it produces, not only enjoy its benefits ourselves, but transmit its valuable influence to future generations. No practice can be good or safe unless it is founded on permanent principles. The future satisfaction and improvement of art and science depend altogether on this investigation, and the establishment of a practical science of vision. As respects the purposes of art, the science of perspective proposes to define the images of external objects as seen by the eye. It would be ridiculous to append “as seen by the eye,” to the definition of the art, as nothing can be seen but by the eye, were it not to distinguish optical effects (upon which our natural ideas depend) from those shapes which in abstract science may be required for solutions unconnected with vision. It will be evident that, whether we require the practical skill of drawing the appearances of objects or not, the understanding loses a necessary and valuable power, in not being capable of apprehending natural effects ; hence, the principles of visual science are not less valuable to common knowledge than to the draughtsman and the refined and cultivated mind.

It is only to the theory of perspective that society can look for information on this head ; and how few there are, even among the practitioners of art, who are in any degree versed in this knowledge, imperfect as it is ! And why ? because of its unintelligibility, and its mandates clouding the purer conception. The practice at present consents to the following leading laws :— Vanishing points produced by parallels to the base lines of the object, from the point of station, cutting the line of projection through the nearest point of the object ; the adjustment of the horizontal line (on which the vanishing points are fixed) at the height of the draughtsman’s or spectator’s eye from the base line of the elevation ; a vertical section of the visual rays proceeding from objects to the eye, that is, a section perpendicular to the ground plane, or natural horizon ; and the invariable erection of the geometrical altitudes of perpendiculars in all elevations or depressions of the point of view. On these leading features of the old system are established the consequent minor details of the art. Writers have introduced various methods to facilitate the practice, but a strict adherence to these fundamental rules has been observed by all ; so that in contrasting mine it is not necessary to particularise any author’s system. I will now explain these rules by my models and diagrams, after which I will lay before you my new theory ; or, I should have said, the *principles* I have perceived to be the *causes* of unalterable and unavoidable optical effects.

Mr. Parsey then explained that, in the old system, he held the only true case to be when the horizontal line passes through half the altitude of the object with equidistant vanishing points. He then entered into an explanation of his own system, in which he held that the lateral plan exhibits the true plane of the picture, which demands an optical placing of the vanishing points, a natural adjustment of the horizontal line, the visual reduction of altitudes to agree with reduced horizontals in width and depth, with the consequent minor details of the visual science. This formed the principal feature in the explanatory part of his lecture. He continued :—

“ The effects, and the practical principles I have laid down for producing them, I have not defined by ingenuity, or on any peculiar views of my own ; they are not a contrivance to gain popularity for novelty’s sake ; but they are the natural causes of the infinite, unavoidable, and incessant influences of external nature on the vision of all mankind. To these, then, we must consent ; by these we must be guided in our theories, and by these only can we produce ideas, and pursue our practices on rational grounds. Before my theory and its adoption can be opposed, it must be shown that these are not the

elementary laws of nature; and some justification must be given to the world for persisting in a system at variance with truth and nature, and with the present professions of societies and individuals for the advancement of science: wilful and obstinate, indeed, will be the continuation of erroneous practice; and wicked, I may say, will be the dissemination of doctrines known to be suppressive of a right understanding of that faculty, by which, if we make a right use of the divine boon, we may “look from nature up to nature’s God.”

Amongst his testimonials, Mr. Parsey mentioned those of the Rev. J. B. Reade, nephew of the late Professor Farish, author of *Isometrical Projection*; R. R. Reinagle, Esq., R.A.; the late John Constable, Esq., R.A.; William Etty, Esq., R.A., &c. He went on to say, —

“It is said on all sides that my theory is correct; but that it would be absurd to put it into practice. The admission of the truth of my principles at once does away with any absurdity in adopting them; for it would be tantamount to insanity to argue, that practice may be justly pursued on false principles. It is the perfection of human efforts to combine principles and practice.

“Deem me not presumptuous or arrogant in calling upon this learned and influential Society to set the example of public recognition; and, as Manchester is a point from which so many improvements in art, science, and manufacture emanate, to claim to ourselves the distinction of being the first public body to acknowledge the accomplishment of this desideratum. Lay the foundation stone of the temple of taste, unfurl the standard, and place the British school of art on a proud preeminence. Deter not merit from struggling for the universal good, and let the persevering see that their efforts will not be in vain. The art of design, in all its branches, must be feeble till its root be cultivated and nourished. A perfect theory of perspective has been anxiously sought by the refined of all polished nations. Hail, then, the accomplishment as a British achievement, and let our native talent first reap the advantages of an improved practice.”

At the conclusion of the lecture, Mr. Parsey entered into conversation of nearly one hour’s length, freely discussing with the members his new principles, meeting any objections which were suggested, and more familiarly illustrating his views. A vote of thanks was then proposed to him, which was instantly carried by acclamation. Mr. Hance addressed the members, and stated that he had been decidedly prejudiced against the new system; but, from instructions received of Mr. Parsey, he was a decided convert. The members separated at a late hour, after one of the most gratifying meetings they have had since the establishment of their Society, which now bids fair to take root and rear its head amongst the permanent institutions of the town. (*Manchester Times*, March 10. 1838.)

St. Helen’s. — We understand that the inhabitants of St. Helen’s have, with their usual spirit, had a public meeting for the purpose of entering into arrangements for the erection of a town hall, constable’s house, bridewell, &c., on rather an extensive scale; after which a subscription list was immediately opened, and in less than seven days 3,000*l.* subscribed. Plans are to be forthwith advertised for, and it is expected that early in January next the building will be ready for use. The situation is on the south side of the New Square, which has lately been laid out and flagged in the centre, and which is intended to be used as the Market-place. This square is already nearly built round with handsome shops and lofty houses, four stories high, all of which are uniform, beautifully stuccoed, &c.; and, when finished, will be one of the handsomest squares in Lancashire; being hitherto under the superintendence of Mr. Fowden of Manchester, for the Society of Friends, whose property in St. Helen’s is, we believe, rather extensive. (*Id.*)

SCOTLAND.

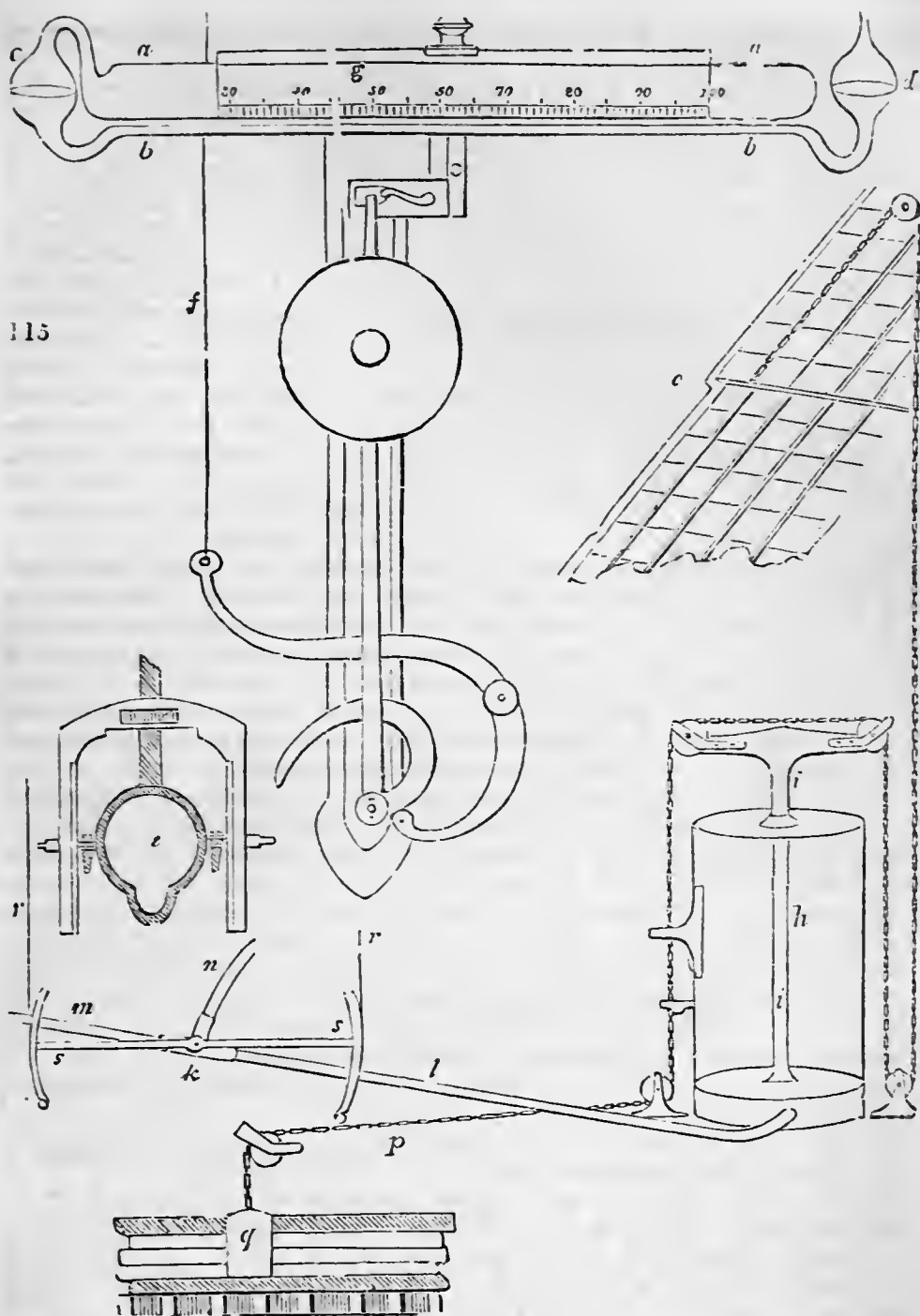
LANARKSHIRE. — *Glasgow.* — Not a single member of the Mechanics’ In-

stitution of Glasgow, containing about 600 members, has ever been concerned in a strike. (*Newsp.*)

RENFREWSHIRE. — *A new Water Power.* — The discovery of a new application of water power, which is likely to be attended with most important consequences, has been lately made by a tradesman in Greenock. Like all truly valuable discoveries, it is distinguished alike for simplicity and efficiency. It consists of a cylinder and a piston similar to those employed in a steam-engine. To the cylinder there are two entrance and two discharge pipes, one of each on each side of the stuffing-box of the piston. The same turn of the cock that admits the water into the one part of the cylinder opens the discharge pipe in the other, and thus a vacuum is formed. To work this, advantage is taken of the pressure of the Shaw's Water, the height of the reservoir of which gives it a force of 60 lb. to the inch, in the lower parts of the town of Greenock. A short time ago, an experiment was tried with a cylinder 2 in. in diameter, worked with a jet of water of somewhat less than a quarter of an inch in diameter, and the piston, although loaded with $1\frac{1}{2}$ cwt., rose and fell 16 times in the minute. In this case the entrance and discharge pipes were equal in size, and the cylinder was placed in a vertical position. Since then, the discoverer has had another model made with the cylinder laid horizontally, and with the discharge pipes nearly three times as large as the entrance ones, and by this means the motion was increased to 26 double strokes in the minute. The cheapness of an apparatus of this kind, and its efficiency, wherever there is a sufficient height of water to work it, must be obvious to all, while its manageableness and freedom from danger are no less conspicuous. The merit of this discovery is due to Mr. William Allison, a mason of Greenock, who first suggested this novel application of a well-known power to Mr. James Baird, engineer, and Mr. A. Fairgrieve, plumber, who had materially aided him in reducing it to practice. One use to which Mr. Allison conceives it to be peculiarly applicable is, the hoisting of heavy goods into warehouses. The Shaw's Water Company, for 7*l.* a year, gives a supply of water equal to 1000 gallons per day. This water injected into a cylinder 10 in. in diameter, he calculates, will raise to the second floor 300 tons per day; to the third floor, 200 tons; to the fourth, 150; and to the fifth, 100 tons. The cost of the water for each day's work is about 5*d.* The goods in question will be raised at the rate of 39 ft. per minute. These calculations have proceeded upon the pressure of the water introduced into the town for domestic purposes; but a pipe from the Compensation Dam at the Paper Mill, from its superior height, would give a pressure of about 200 lb. on the inch. (*Greenock Advertiser*, as quoted in the *Dumfries Courier*, Sept. 6. 1837.)

A similar application of water was made by Mr. Kewley, about 1819. The object was to open and shut the sashes of a dwelling-house or a green-house, so as to regulate the temperature within; a thermometer of a particular description being employed to turn the water off and on instead of a man. See *Encyc. of Gard.*, ed. 1835, p. 557., from which we make the following extract:—

"*Kewley's Alarum-Thermometer* (fig. 115.) consists of a glass tube (*a a*) about 10 in. in length, hermetically sealed at one end, and united at the other to a capillary tube (*b b*), with an intervening and also a terminating ball (*e* and *d*). Imagine this double tube placed in a horizontal position, the larger tube, and half the intervening ball, filled with spirits of wine; and the smaller tube, and half of both of the balls, with mercury. If the tube be now fixed by its centre in a brass frame (*e*), and nicely balanced, it is evident that every change in the temperature of the atmosphere will produce a change in the position of the centre of gravity of the tubes. One degree of heat, by expanding the spirit, will press on the mercury in the intervening ball (*e*), and drive part of it over to the terminating tube (*d*), which end will, in consequence, descend like the beam of a pair of scales or of a steam-engine. Hence, a moving power of great nicety and certainty is obtained, the details of the application of which to the ringing of a bell at any distance, communicating by a wire (*f*), need not be here entered into. Suffice it to say that, by means of a scale (*g*), it may



be set to any required temperature, and will give the alarm at a difference of even the fourth of a degree either of depression or elevation. It may be occasionally used in gardening, to convey some idea of the changes taking place in the temperature of particular hot-houses, to the head gardener's room, in the night-time; but its most important uses are in domestic economy, hospitals, &c. This balance-thermometer, as it may be called, has been also applied, by its ingenious inventor, to the opening and shutting of windows or sashes, valves of chimneys or flues, and steam-cocks, and either to all of these purposes at once, or to any of them.

IRELAND.

Dublin, May 30. 1838.—My house (see Vol. IV. p. 84.) is now approaching completion. The warming and ventilating arrangements have been more

successful than I ventured to anticipate, as, during the coldest days of February and March, the whole space of the building, from the dining-room floor to the attics, was kept at a pretty uniform temperature, no part being below 50° nor above 60°, although the walls were then far from being dry. The air issuing from the stove was never above 70°, and seldom so high.

The experience of last winter has satisfied me of the efficiency of my devices for securing water-pipes, water-closets, gas-meters, &c., from the effects of frost; except in one case, where I had apprehended no danger, viz. in the vertical rain-water pipe from the roof, which, I imagined, from being always empty, unless during rain, was not liable to accident. I found, however, that, when the sun began to have the power of making partial thaws, melted snow from the roof ran into the pipe, froze there, and, by gradual accumulation, closed it up; and, if this had not been noticed at the moment, and obviated by throwing a handful of salt into the gutter and mouth of the pipe, some mischief would have ensued. I fear this evil is not easily remedied by construction, as there are many objections to carrying down the rain pipe through the interior of the house; and it is lucky that, by opening a skylight and throwing out a few pounds of salt, the mischief may be avoided in the severest winter.

The person who, since the death of the contractor, is superintending the finishing of the house, is a house carpenter (a Scotchman from Edinburgh); and I have never met a person in his rank of life who united so much skill, taste, and judgment, with such respectable regular conduct. I cannot help thinking that he would be a valuable acquisition as an overseer to any architect carrying on great works. I should be happy to see his merits appreciated and rewarded; and hope, if you know of any one requiring the services of such a person, you will have the goodness to let me know. — *J. M.*

[If any of our readers should know of a situation likely to suit such a person as is mentioned by our correspondent, we shall feel much obliged to him if he will let us know, as nothing would afford us greater pleasure than to be useful in such a case. — *Cond.*]

ART. IV. *Institute of British Architects.*

APRIL 9. 1838. — P. F. Robinson, V.P., in the chair.

Elected. His Grace the Duke of Northumberland, as an Honorary Fellow; A. Moseley, and A. C. Hakewill, as Associates.

Read. A paper on Porticoes, by J. Britton; and another on the Nature, Properties, and Elementary Principles of Iron, by A. H. Renton.

April 23. — Presented. *Raccolta de' Monumenti sacri e sepolcrali di Roma, designati da F. Thon, ed. a Becchio. Serie di Opere d'Architettura, ed. dall'Arch. Moraldi, Nos. 1, 2, and 3. Cavalieri S. Bertolo Instituti di Architettura Pratica, vols. 1. and 2. Canina, Architettura Antica, Græca, Romana; 3 vols. 8vo. Canina, Descrizione del Foro Romano: 1 vol. 8vo. Tracings of the Drawings of a Synagogue, erected in 1832, at Copenhagen, from M. Hetsch. Engravings of the Cathedral of Roeskilda, eight leagues from Copenhagen. View of the Castle of Cronberg, near Elsinor. Views of the old St. Paul's and the Chapter House.*

Read. The continuation of Mr. Renton's paper on Iron; and a paper on the Plan and Decoration of the Temple Church, London, particularly with regard to their typical Significations in reference to the Doctrines, Customs, and Ceremonials of the Knights Templars, by R. W. Billings.

THE ARCHITECTURAL MAGAZINE.

AUGUST, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *The Poetry of Architecture.* By KATA PHUSIN.

No. 3. THE VILLA.

I. *The Italian Villa.* (Concluded.)

WE do not think there is any truth in the aphorism, now so frequently advanced in England, that the adaptation of shelter to the corporal comfort of the human race is the original and true end of the art of architecture, properly so called: for, were such the case, he would be the most distinguished architect who was best acquainted with the properties of cement, with the nature of stone, and the various durability of wood. That such knowledge is necessary to the perfect architect we do not deny; but it is no more the end and purpose of his application, than a knowledge of the alphabet is the object of the refined scholar, or of rhythm of the inspired poet. For, supposing that we were for a moment to consider that we built a house *merely* to be lived in, and that the whole bent of our invention, in raising the edifice, is to be directed to the provision of comfort for the life to be spent therein; supposing that we build it with the most perfect dryness and coolness of cellar, the most luxurious appurtenances of pantry; that we build our walls with the most compacted strength of material, the most studied economy of space; that we leave not a chink in the floor for a breath of wind to pass through, not a hinge in the door, which, by any possible exertion of its irritable muscles, could creak; that we elevate our chambers into exquisite coolness, furnish them with every ministry to luxury of rest, and finish them with every attention to the maintenance of general health, as well as the prevention of present inconvenience: to do all this, we must be possessed of great knowledge and various skill; let this knowledge and skill be applied with the greatest energy, and what have they done? Exactly as much as brute animals can do, by mere instinct; nothing more than bees and beavers, moles and magpies, ants and earwigs, do every day of their lives, without the slightest effort of reason; we have made ourselves superior as architects to the most degraded animation of

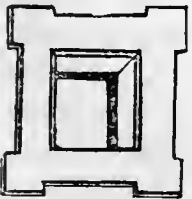
the universe, only inasmuch as we have lavished the highest efforts of intellect, to do what they have done with the most limited sensations that can constitute life. The mere preparation of convenience, therefore, is not architecture in which man can take pride, or ought to take delight; but the high and ennobling art of architecture is, that of giving to buildings, whose parts are determined by necessity, such forms and colours as shall delight the mind, by preparing it for the operations to which it is to be subjected in the building: and thus, as it is altogether to the mind that the work of the architect is addressed, it is not as a part of his art, but as a limitation of its extent, that he must be acquainted with the minor principles of the economy of domestic erections. For this reason, though we shall notice every class of edifice, it does not come within our proposed plan, to enter into any detailed consideration of the inferior buildings of each class, which afford no scope for the play of the imagination by their nature or size; but we shall generally select the most perfect and beautiful examples, as those in which alone the architect has the power of fulfilling the high purposes of his art. In the villa, however, some exception must be made, inasmuch as it will be useful, and, perhaps, interesting, to arrive at some fixed conclusions respecting the modern buildings, improperly called villas, raised by moderate wealth, and of limited size, in which the architect is compelled to produce his effect without extent or decoration. The principles which we have hitherto arrived at, deduced as they are from edifices of the noblest character, will be but of little use to a country gentleman, about to insinuate himself and his habitation into a quiet corner of our lovely country; and, therefore, we must glance at the more humble homes of the Italian, preparatory to the consideration of what will best suit our own less elevated scenery.

First, then, we lose the terraced approach, or, at least, its size and splendour, as these require great wealth to erect them, and perpetual expense to preserve them. For the chain of terraces we find substituted a simple garden, somewhat formally laid out; but redeemed from the charge of meanness by the nobility and size attained by most of its trees; the line of immense cypresses which generally surrounds it in part, and the luxuriance of the vegetation of its flowering shrubs. It has frequently a large entrance gate, well designed, but carelessly executed; sometimes singularly adorned with fragments of exquisite ancient sculpture, regularly introduced, which the spectator partly laments, as preserved in a mode so incongruous with their ancient meaning, and partly rejoices over, as preserved at all. The grottoes of the superior garden are here replaced by light ranges of arched summerhouses, designed in stucco,

and occasionally adorned in their interior with fresco paintings of considerable brightness and beauty.

All this, however, has very little effect in introducing the eye to the villa itself, owing to the general want of inequality of level in the ground, so that the main building becomes an independent feature, instead of forming the apex of a mass of various architecture. Consequently, the weight of form which in the former case it might, and even ought to, possess, would here be cumbrous, ugly, and improper; and accordingly, we find it got rid of. This is done, first by the addition of the square tower, a feature which is not allowed to break in upon the symmetry of buildings of high architectural pretensions; but is immediately introduced, whenever less richness of detail, or variety of approach, demands or admits of irregularity of form. It is a constant and most important feature in Italian landscape: sometimes high and apparently detached, as when it belongs to sacred edifices; sometimes low and strong, united with the mass of the fortress, or varying the form of the villa. It is always simple in its design, flat-roofed, its corners being turned by very slightly projecting pilasters, which are carried up the whole height of the tower, whatever it may be, without any regard to proportion, terminating in two arches on each side, in the villa most frequently filled up, though their curve is still distinguished by darker tint and slight relief. Two black holes on each side, near the top, are very often the only entrances by which light or sun can penetrate. These are seldom actually large, always proportionably small, and destitute of ornament or relief. The forms of the villas to which these towers are attached are straggling, and varied by many crossing masses; but the great principle of simplicity is always kept in view, every thing is square and terminated by parallel lines; no tall chimneys, no conical roofs, no fantastic ornaments are ever admitted: the arch alone is allowed to relieve the stiffness of the general effect. This is introduced frequently, but not in the windows, which are either squares or double squares, at great distances from each other, set deeply into the walls, and only adorned with broad flat borders,

116



as in *fig.* 116. Where more light is required they are set moderately close, and protected by an outer line of arches, deep enough to keep the noonday sun from entering the rooms. These lines of arches cast soft shadows along the bright fronts, and are otherwise of great value. Their effect is pretty well seen in

fig. 117.; a piece which, while it has no distinguished beauty, is yet pleasing by its entire simplicity; and peculiarly so, when we know that simplicity to have been chosen (some say, built) for its last and lonely habitation, by a mind of softest passion as of

117



purest thought; and to have sheltered its silent old age among the blue and quiet hills, till it passed away like a deep lost melody from the earth, leaving a light of peace about the grey tomb at which the steps of those who pass by always falter, and around this deserted, and decaying, and calm habitation of the thoughts of the departed; Petrarch's, at Arquà. A more familiar instance of the application of these arches is the villa of Mæcenas at Tivoli, though it is improperly styled a villa, being pretty well known to have been nothing but stables.

The buttress is the only remaining point worthy of notice. It prevails to a considerable extent among the villas of the south, being always broad and tall, and occasionally so frequent as to give the building, viewed laterally, a pyramidal and cumbersome effect. The most usual form is that of a simple sloped mass, terminating in the wall, without the slightest finishing, and rising at an angle of about 84° . Sometimes it is perpendicular, sloped at the top into the wall; but it never has steps of increasing projection as it goes down. By observing the occurrence of these buttresses, an architect, who knew nothing of geology, might accurately determine the points of most energetic volcanic action in Italy; for their use is to protect the building from the injuries of earthquakes, the Italian having far too much good taste to use them, except in cases of extreme necessity. Thus, they are never found in North Italy, even in the fortresses. They begin to occur among the Apennines, south of Florence; they become more and more frequent and massy towards Rome; in the neighbourhood of Naples they are huge and multitudinous, even the walls themselves being sometimes sloped; and the same state of things continues as we go south, on the coasts of Calabria and Sicily. Now, these buttresses present one of the most extraordinary and striking instances of the beauty of adaptation of style to locality and peculiarity of circumstance, that can be met with in the whole range of architectural investigation. Taken in the abstract, they are utterly detestable, formal, clumsy, and apparently unnecessary. Their builder thinks so himself: he hates them as things to be looked at, though he erects them as things to be depended upon. He has no idea that there is any propriety in their presence, though he knows perfectly well that there is a great deal of necessity; and, therefore, he builds them. Where? On rocks whose sides are one mass of buttresses, of precisely the same form; on rocks which are cut and cloven by basalt and lava dikes of every size, and which, being themselves secondary, wear away gradually by exposure to the atmosphere, leaving the intersecting dikes standing out in solid and vertical walls, from the faces of their precipices. The eye passes over heaps of scoriæ and sloping banks of ashes, over the huge ruins of more ancient

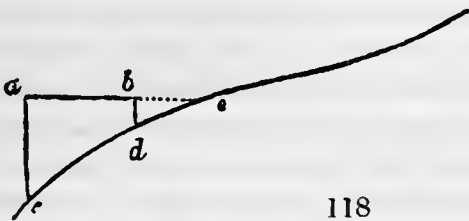
masses, till it trembles for the fate of the crags still standing round; but it finds them ribbed with basalt like bones, buttresses with a thousand lava walls, propped upon pedestals and pyramids of iron, which the pant and the pulse of the earthquake itself can scarcely move, for they are its own work; it climbs up to their summits, and there it finds the work of man; but it is no puny domicile, no eggshell imagination, it is in a continuation of the mountain itself, inclined at the same slope, ribbed in the same manner, protected by the same means against the same danger; not, indeed, filling the eye with delight, but, which is of more importance, freeing it from fear, and beautifully corresponding with the prevalent lines around it, which a less massive form would have rendered, in some cases, particularly about Etna, even ghastly. Even in the lovely and luxuriant views from Capo di Monte, and the heights to the east of Naples, the spectator looks over a series of volcanic eminences, generally, indeed, covered with rich verdure, but starting out here and there in grey and worn walls, fixed at a regular slope, and breaking away into masses more and more rugged towards Vesuvius, till the eye gets thoroughly habituated to their fortress-like outlines. Throughout the whole of this broken country, and, on the summits of these volcanic cones, rise innumerable villas; but they do not offend us, as we should have expected, by their attestation of cheerfulness of life amidst the wrecks left by destructive operation, nor hurt the eye by non-assimilation with the immediate features of the landscape: but they seem to rise prepared and adapted for resistance to, and endurance of, the circumstances of their position; to be inhabited by beings of energy and force sufficient to decree and to carry on a steady struggle with opposing elements, and of taste and feeling sufficient to proportion the form of the walls of even to the clefts in the flanks of the volcano, and to prevent the exultation and the lightness of transitory life from startling, like a mockery, the eternal remains of disguised desolation.

We have always considered these circumstances as most remarkable proofs of the perfect dependence of architecture on its situation, and of the utter impossibility of judging of the beauty of any building in the abstract: and we would also lay much stress upon them, as showing with what boldness the designer may introduce into his building, undisguised, such parts as local circumstances render desirable; for there will invariably be something in the nature of that which causes their necessity, which will endow them with beauty.

These, then, are the principal features of the Italian villa, modifications of which, of course more or less dignified in size, material, or decoration, in proportion to the power and possessions of their proprietor, may be considered as composing every

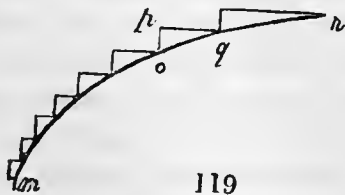
building of that class in Italy. A few remarks on their general effect will enable us to conclude the subject.

We have been so long accustomed to see the horizontal lines and simple forms which, as we have observed, still prevail among the Ausonian villas, used with the greatest dexterity, and the noblest effect, in the compositions of Claude, Salvator, and Poussin; and so habituated to consider those compositions as perfect models of the beautiful, as well as the pure in taste; that it is difficult to divest ourselves of prejudice, in the contemplation of the sources from which those masters received their education, their feeling, and their subjects. We would hope, however, and we think it may be proved, that in this case principle assists and encourages prejudice. First, referring only to the gratification afforded to the eye, which we know to depend upon fixed mathematical principles, though those principles are not always developed, it is to be observed, that country is always most beautiful when it is made up of curves, and that one of the chief characters of Ausonian landscape is, the perfection of its curvatures, induced by the gradual undulation of promontories into the plains. In suiting architecture to such a country, that building which least interrupts the curve on which it is placed will be felt to be most delightful to the eye.



Let us take then the simple form $abcd$, interrupting the curve ce . Now, the eye will always continue the principal lines of such an object for itself, until they cut the main curve; that is, it will carry on ab

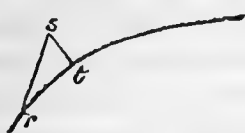
to e , and the total effect of the interruption will be that of the form cde . Had the line bd been nearer ac , the effect would have been just the same. Now, every curve may be considered as composed of an infinite number of lines at right angles to each other, as mn is made up of op , pq , &c. (*fig. 119.*), whose ratio to each other varies with the direction of the curve. Then, if the



right lines which form the curve at c (*fig. 118.*) be increased, we have the figure cde , that is, the apparent interruption of the curve is an increased part of the curve itself. To the mathematical reader we can explain our meaning more

clearly, by pointing out that, taking c for our origin, we have ac , ae , for the coordinates of e , and that, therefore, their ratio is the equation to the curve. Whence it appears, that, when any curve is broken in upon by a building composed of simple

vertical and horizontal lines, the eye is furnished, by the interruption, with the equation to that part of the curve which is interrupted. If, instead of square forms, we take obliquity, as *rst* (fig. 120.), we have one line, *st*, an absolute break, and the other, *rs*, in false proportion. If we take another curve, we have an infinite number of lines, only two of which are where they ought to be. And



120

this is the true reason for the constant introduction of features which appear to be somewhat formal, into the most perfect imaginations of the old masters, and the true cause of the extreme beauty of the groups formed by Italian villages in general.

Thus much for the mere effect on the eye. Of correspondence with national character, we have shown that we must not be disappointed, if we find little in the villa. The unfrequency of windows in the body of the building is partly attributed to the climate; but the total exclusion of light from some parts, as the base of the central tower, carries our thoughts back to the ancient system of Italian life, when every man's home had its dark, secret places, the abodes of his worst passions; whose shadows were alone intrusted with the motion of his thoughts; whose walls became the whited sepulchres of crime; whose echoes were never stirred except by such words as they dared not repeat*; from which the rod of power, or the dagger of passion, came forth invisible; before whose stillness princes grew pale, as their fates were prophesied or fulfilled by the horoscope or the hemlock; and nations, as the whisper of anarchy or of heresy was avenged by the opening of the low doors, through which those who entered returned not.

The mind of the Italian, sweet and smiling in its operations, deep and silent in its emotions, was thus, in some degree, typified by those abodes into which he was wont to retire from the tumult and wrath of life, to cherish or to gratify the passions which its struggles had excited; abodes which now gleam brightly and purely among the azure mountains, and by the sapphire sea, but whose stones are dropped with blood; whose vaults are black with the memory of guilt and grief unpunished and unavenged, and by whose walls the traveller hastens fearfully, when the sun has set, lest he should hear, awakening again through the horror of their chambers, the faint wail of the children of Ugolino, the ominous alarm of Bonatti, or the long low cry of her who perished at Coll-Alto.

Oxford, July, 1838.

* Shelley has caught the feeling finely: — "The house is penetrated to its corners by the peeping insolence of the day. When the time comes the crickets shall not see me." — *Cenci*. " "

ART. II. *On the Choice of a Situation for a Church; and on the Laying out and Planting of the Churchyard.* By the CONDUCTOR.

THE public attention has been so much occupied with churches, that churchyards seem to have been lost sight of; for, though a great number of new churches have been erected within the last ten years, many of them of greatly improved architecture and interior arrangements, yet we have scarcely heard of an instance, in which any thing has been done in the way of laying out the churchyard agreeably to some fixed principles, and conducting the interments afterwards according to some system. In this view of the matter, for want of something better we submit the following paragraphs from the *Suburban Gardener*, into which work they were introduced incidentally, when treating of parsonage residences; a characteristic of parsonages being their proximity to, or connexion with, a church and churchyard.

CHURCHYARDS, like every description of yard or garden, ought to be laid out, planted, and managed, with reference to their use; and the scenery produced should, in its expression and general effect, indicate what that use is, or, at all events, be in accordance with it. A churchyard ought not to be laid out so as to be mistaken for a pleasure-ground, a shrubbery, or a flower-garden; neither, on the other hand, ought it to be left in a state of utter neglect, without regular walks, and overgrown with weeds and rank grass. The use of the churchyard is as a place of burial, as an enclosure and protection to the church, as a place sacred to the memory of the dead, as a place of weekly meeting for solemn purposes, and as an approach to the church. All its uses are of a serious and important nature; and it is therefore to be considered as a grave and solemn scene. Now, the question to be solved in laying out a churchyard is, what treatment of the trees, the surface of the ground, the grass, walks, graves, gravestones, and tombs, will be most conducive to solemnity of effect. The expression of the exterior of the church is grave and solemn, by its long-established association with our religious feelings; and it therefore may be considered as having a similar influence on the scenery around. The feeling of solemnity is one more of a passive, than of an active, nature: it neither needs to be much cultivated, nor much exercise of the imagination. Strong contrasts are not required to excite this feeling, nor varied and intricate scenery to prolong it. It has its origin in the uses of the place, and will only be interfered with, or weakened, by the introduction of such objects as interfere with these uses. Simplicity, therefore, ought to be a governing principle in every thing relating to church-

yards; and, as the appearance of neglect or slovenliness always implies want of respect, order and neatness are next in importance. By order, we mean the avoiding of every thing like confusion in the disposition of the trees, or the placing of the tombs and gravestones; and, by neatness, we allude more particularly to keeping the turf short and smooth, the walks firm, even, and free from weeds, the gravestones upright, and the tombs in a state of repair.

The character of a churchyard, as a place of burial, will always be more or less influenced by the character and manners of the people to whom it belongs. In Britain, churchyards have much less care bestowed upon them than in Central Germany, and in some parts of France, Belgium, and Holland. The sentiment of respect to the memory of deceased persons in these countries is shown by planting flowers over the graves, and frequently cultivating them there for some years afterwards. Among the Moravians, on the Continent, the churchyard is sometimes laid out in compartments, with walks between, like a garden; and the compartments are kept dug, and planted with flowers and ornamental plants. Two powerful arguments are advanced in favour of this practice: the first is, that a churchyard so managed costs less than if it were in turf, and kept short by mowing; the second, that the surface of the ground has always the same appearance, there being no gravestones or tombs, and the ground being left level, and replanted with the plants which stood on it before, after every interment; these having been carefully taken up, and placed on one side, before the grave was dug. It is evident that this mode of treating a churchyard, however consonant it may be to the ideas of those who adopt it, is not in accordance with our desiderata. It does not indicate its use, as it has neither raised graves, tombs, gravestones, nor any other appearance of its being a place of burial; and it is not calculated to excite solemn emotions, as it has all the gaiety of a flower-garden.

In Britain, respect for the dead is not generally shown by the introduction of flowers over their graves; but the practice prevails in some places throughout the country, more especially in Wales, and is not unfrequent in the metropolitan and other cemeteries. Perhaps it ought to be commended and encouraged, as the frequent recollection of deceased friends has a tendency to sober the mind and cultivate the affections of the living. In every part of Germany, where the inhabitants are in the habit of cultivating flowers on the graves of their friends, or even of visiting these graves annually on a certain day and decorating them, the inhabitants are a reflective, and very humane and amiable, people; for example, at Munich. The introduction of flowers in churchyards, therefore, where they are planted over

the graves by the relations of the deceased, is a very different thing from their introduction in the margins of plantations of trees and shrubs, as is done in some of our public cemeteries, in imitation of shrubberies; to the utter neglect, as we think, of appropriate character and expression. Bearing in mind, therefore, the three principles of simplicity, order, and neatness, as guides in laying out churchyards, we shall next proceed with the details.

Situation and Soil. It is almost unnecessary to observe that a country church ought either to be built adjoining the village for which it is intended, or, if it is to serve two or three villages, in a situation central to them. The surface of the ground ought to be an elevated knoll, in order that the church and the spire may be seen on every side, and, if possible, throughout the whole extent of the parish. The knoll should be sufficiently large to admit of its summit being reduced to a level, or, at all events, to a nearly level, platform, or piece of table land, about the size of the churchyard; a level surface being more convenient for the purpose of interment than a sloping one, for a reason that will be given hereafter. Besides which, the ground plan of a church being a parallelogram, to see it rising out of a round knoll would be contrary to every idea of a suitable and secure foundation. Where there is no want of room, or not many burials likely to take place, the surface of a churchyard, instead of being level, may be quite irregular; but, in this case, the places for graves, and the walks of communication to these places, must be rendered easily accessible, and, to a certain extent, level. This can always be effected by laying the ground out in terraces: a mode of disposition which may be as advantageously adopted in churchyard gardening, as it is in gardening as an art of culture. The soil should, if possible, be sandy or gravelly, as being most suitable for promoting animal decomposition; but any soil may be rendered fit for this purpose by deep trenching, and the addition of sand, gravel, and lime rubbish, so as to form an artificial stratum as deep as it is intended to dig the graves. The worst of all soils for a churchyard is a stiff wet clay; which, by its compactness and retention of water, prevents the natural decomposition of the body, and has even been known to change it into an adipose substance.

The Size of the Church, and the Extent of the Churchyard, will depend on the population for whose service they are intended, and on the probable slowness or rapidity of its increase. The form of the church may be considered as fixed, by precedent and immemorial usage, in that of a parallelogram, with or without projections at the sides, so as to give it the form of a Latin cross; and having a tower, steeple, or cupola, at one end, for the church bells, and a clock. There are some examples, however, of

churches having been made semicircular, circular, or polygonal, in the plan, so as to suit them to particular situations.

The form of the churchyard is not fixed, like that of the church, but will naturally be determined jointly by the form and position of the church, and the form of the ground which surrounds it. If the ground be level, or nearly so, then the outline of the churchyard may coincide with that of the church; so as also to form a large parallelogram, in the direction of east and west, that being the prescribed bearing of all Christian churches. If the church be situated on the summit of a conspicuous conical hill, or dome-like knoll, then the outline of the churchyard will be determined solely by the ground, and may be circular, oval, or roundish; and we may here observe, that, when cases of this kind occur, as they are not very common, we think the ground plan of the church ought to be round, or roundish, also. In general, the position and form of the churchyard ought to be such as will have a good effect from all the different parts of the surrounding parish from which it is seen; while, at the same time, it should look well from its immediate vicinity, and also from the different doors and sides of the church.

The Site of the Church should be central to the natural shape of the ground which is to constitute the churchyard, when that shape is in any way remarkable; but, where the surface of the ground is level, the church may be placed nearer one end of the parallelogram, or other-shaped piece of ground, which forms the churchyard, than another; or even nearest to one side, provided this is not attended with injustice to the parishioners. In general, the exact position of the church within the churchyard, when not determined by natural circumstances, ought to be regulated by the number of sides on which it is approached. If the parish lie equally round the church on every side, there will be at least four gates to the churchyard, corresponding with the four cardinal points; and in that case the church ought to be in the centre of the churchyard: but, if there be only a gate at one end, or if there should be several gates, but all nearer one end than the other, the church ought to be placed accordingly.

The Ground Plan of the Church, its exact position in the churchyard, the boundary lines of the latter, and the different churchyard doors or gates being fixed on, before anything farther is done, the church ought to be built; and we shall suppose that its elevation is so designed as to appear to rise from a platform of gravel or pavement, of from 10 ft. to 20 ft. wide, according to the size of the church; this platform, or terrace, being supported by a sloping bank of turf, at an angle of 45° , and furnished with flights of steps opposite each of the churchyard gates. Underneath the surrounding platform, there ought to be a deep barrel-

drain, or box-drain, for receiving the rain-water from the roof of the church, and thus keeping the foundations dry; and from this drain there ought to proceed others of the same kind, under each of the walks which lead from the church platform to the boundary wall. These last, besides carrying away the water collected in the drain which surrounds the church, will dry the subsoil of the churchyard generally; and receive the surface water from the walks, through gratings placed at regular distances.

The Boundary Fence of the churchyard should be such as to exclude every kind of domestic quadruped; but it is not, in general, necessary that it should be so high as to prove a barrier to man, because it may fairly be supposed that most persons will reverence the interior more or less, and that those who are without this reverence will have, in general, nothing to gain by breaking into such a scene. We here exclude altogether the consideration of body-stealing, which can only be practised by a particular set; who, in the country at least, are rarely to be met with. As swine and rabbits are particularly offensive in churchyards, especially where the soil is sandy, the boundary fence should either be a low wall of 3 ft., surmounted by a holly or thorn hedge; or a wall of 6 or 7 feet in height, without any hedge. In the latter case, the inner face of the wall may be planted with common ivy. Where the churchyard is to be united with the adjoining lawn, garden, or pleasure-ground, of the parsonage, the boundary fence on the side next the residence may be an open iron railing; and, where it is to be united with a pleasure-ground on a large scale, or a park, it may either be surrounded by an open iron railing, or by a deep and wide sunk fence. If a hedge is in any case determined on as the boundary to a churchyard, it ought to be kept much broader at bottom than at top, in order that it may grow quite thick and close there; and the only plants fit for such a hedge are the common white thorn and the holly.

The Walks of a Churchyard are of two kinds: those for proceeding from the different gates in the boundary fence to the church doors, for persons going to, or returning from, the church; and those which make the circuit of the churchyard, for the more conveniently viewing the tombs and graves, and for conducting funerals. The walks proceeding from the entrance gates in the boundary fence to the church doors should be always in straight lines, and of a width proportionate to the size of the church and churchyard, but never narrower than 6 ft.; because this is the least width which will allow two persons abreast, carrying a coffin between them, to pass solemnly along: the width, indeed, should be greater rather than less, because nothing can be more indecorous than to see a funeral procession crowded

and huddled together for want of room. In every case, we would, if possible, place the entrance gates so that the walk from them to the church, whetlier to its sides or its ends, might always meet the building at a right angle.

With respect to the walk round the churchyard, it should in every case, and whether the churchyard were small or large, be at a distance of at least 10 ft. from the boundary wall, in order to leave a border sufficiently broad for a range of graves to be placed at right angles to the wall. This walk should be of the same breadth as the others; and, like them, in no case less than 6 ft., for the reasons already mentioned. In most churchyards this boundary walk, and the cross walks necessary as approaches to the church, will be sufficient; but, where this is not the case, cross walks from the boundary walk to the terrace round the church may be added; or a second surrounding walk may be formed, half-way between the terrace or walk round the church, and the circumferential walk.

The Walks of old Churchyards. The preceding remarks constitute our *beau idéal* of churchyard walks, supposing that a church were to be built, and the walks to be laid out on a flat surface; but, as this is not a case of every-day occurrence, the next point is to show what can be done in the case of old churches and churchyards, having, perhaps, only one gate, and one walk from that gate to the church; and where the churchyard is so thickly studded with graves and gravestones as scarcely to leave room for any additional walk, and, at all events, not for a straight one. The mode in which we should proceed in this case would be, to lay out the requisite walks on the same general principles as in a new churchyard, but to make them of double or treble the usual breadth, so that where a tombstone occurred in the middle, or in any part of the walk, there might be room on one side to pass it. In some cases, we might, perhaps, adopt a winding course for the circumferential walk; but, unless the curves coincided with those of the boundary fence, or were made very large, this direction would be so unsuitable in point both of use and expression, that we would avoid it as much as possible. A serpentine walk in a churchyard is a waste of ground, with reference to the placing of the graves; and it has too much of the pleasure-ground air, or even, perhaps, of an air of affectation, for the gravity of the scene.

In every old churchyard there are some of the gravestones, and perhaps even of the tombs, in which no person living has any interest. We are far from saying that any of these should be done away with, in order to allow a walk to be made straight; but we think that, in cases of this kind, there would not be any impropriety in reducing raised tombs, so as to leave the covering stone on a level with the walk, and forming part of its surface;

or in laying down upright gravestones in a flat position for the same purpose. Some families, also, might consent to this being done with the tombs that they are interested in, as it is frequently done purposely; and, probably, with a very few alterations of this kind, the straight, or other suitable direction of the walks might be maintained. With respect to turf graves, without gravestones, it does not seem unreasonable to suppose, that, after a certain number of years, these may be levelled, and a walk carried over them; because, in the common course of things, such graves are reopened, often in a few years, for the purpose of interring persons who have no connexion whatever with those previously buried there. In a word, the interest of the relations of the deceased in the ground, in these cases, can only be considered as lasting for the ordinary period of rotation in the common parts of a burial ground; and this period, which varies in different churchyards, according to the demand for ground, and the nature of the soil, seldom in any exceeds twelve or fourteen years.

The grassy Surface of a Churchyard, when it is newly laid out, should, of course, be even; and the nearer it is to level, the more convenient will it be for all the purposes of interment. Whether even or uneven, it should always have a descent from the church, rather than towards it, for the sake of throwing off the surface water; and in strong clayey soils, in moist climates, provision ought to be made by surface gutters, even in the turf, for conveying the water to underground drains, or directly along the surface to the boundary of the churchyard. In churchyards which have been long in use, the grassy surface is, in general, very uneven, on account of the greater accumulation of graves in one place than in another, and from certain parts being chiefly occupied by tombs, and others by turf graves without marks. Perhaps the chief disadvantage of these inequalities is, that they occasion the production of rank coarse grass, and large weeds, than which we scarcely know anything more unsightly in a churchyard; because they give the idea of neglect, and this seems to derogate from the idea of that respect for the dead, which ought to be the prevailing sentiment raised in the mind by the appearance of a churchyard. If the graves were regularly distributed on some general plan, such accumulations of soil could never occur; and the grass would not be stronger, or the weeds more numerous, in one place than another. One great source of neatness in a churchyard, and consequently of apparent care and respect for the dead, is, the shortness of the grass; and, as the surface is seldom or never so even as to admit of effecting this by mowing, it can generally only be done by grazing it with sheep. In this case, however, flowers cannot be planted over the graves, unless the site, or grave, is enclosed with

an iron fence; but, as this would entail an unreasonable expense on the poor man, who, perhaps, had no other means of evincing his respect for the deceased than by planting flowers on the grave, it follows that mowing or clipping with garden shears is preferable to grazing, for keeping the grass short, and the turf smooth, in churchyards. Another mode which contributes to the same end is, that of never raising the graves above the level of the surface, which may thus be easily mown; but this also appears unjust to the poor man, who, perhaps, can afford no other means than a raised mound to distinguish the grave of even his dearest friend; and, besides, it requires, after a certain period, from the sinking of the graves, to have the turf taken up, and soil introduced to raise their surface to the general level. In all cases, we repeat, it is best to have recourse to the scythe for such places as admit of using it, and in other parts to the hedge-shears. By the constant use of the hedge-shears, indeed, the roughest surface may be kept short and smooth; and, if clergymen were only to see that the leisure time of the sexton and his men was employed in keeping the grassy surface short, churchyards would, in general, be much improved in appearance. The scythe and the shears should always be used when the grass, or other herbage, is quite short, in order to weaken the root, and check the future luxuriance of the plants; in consequence of which, the labour of mowing or clipping, after the first two or three years, would be greatly reduced. On the other hand, if the herbage be allowed to perfect its leaves, and come into flower, as it too often is, before it is cut down, the roots, instead of being weakened by mowing, will be strengthened; the plants having received all the nourishment they require from the leaves, and being prevented from exhausting that nourishment by bearing seed, spring up more vigorously than before, and thus the labour of mowing, instead of being annually diminished, will be increased.

Trees in Churchyards. The number of trees which may be introduced into a churchyard depends on its situation and soil; the great object, next to that of leaving abundance of room for the graves, being to preserve dryness, in order to permit the escape of the mephitic effluvia, which can only be effected by the admission of abundance of light and air. Where the soil is clayey, and the situation low, very few trees are admissible; and these few should be small fastigate-growing kinds, that neither cover a large space with their branches, nor give too much shade when the sun shines. In an elevated open situation, where the soil is sandy or gravelly, the trees in a churchyard may be comparatively numerous; because the shelter which they will afford in winter will produce warmth to persons crossing the churchyard to church; and, from the airiness of the situation, and dryness of the soil, they will not produce

damp when their leaves are on in summer, but will freely admit of evaporation from the surface.

Supposing a new churchyard to be planted, we should place the trees chiefly at regular distances, in rows parallel to the walks. There are very few churchyards that would bear more trees than a row on each side of the circumferential walk, and also on each side of the walks leading from the entrance gates to the church doors; while, in cases of limited extent, and a clayey soil, a row of trees, planted at regular distances along the boundary fence, will, perhaps, be as many as can be introduced without producing damp; and, in others, a few trees along each side of the principal walk from the entrance gate of the churchyard to the church will, perhaps, be enough. It must not be forgotten, that the principal part of the area of a churchyard, in general, lies from east to west, and, consequently, that all trees planted in that direction will throw a shade upon the ground the greater part of every day that the sun shines, throughout the year. For this reason, where the soil is so damp, or the situation so confined, as to render it advisable to introduce but very few trees, these ought either to be in lines along such of the approaches to the church terrace as lie in the direction of north and south; or to be introduced as single trees, at the intersections of the cross walks with the boundary walk.

The kinds of trees to be planted in a churchyard form a subject of as great importance as their number; because a single tree of some species will produce more bulk of head, and consequently more shelter, shade, and damp, than half a dozen trees of some other kinds. As a guide in the choice of the kinds of trees, it may be adopted as a principle, that none ought to be planted which will grow higher than the side walls of the church; because to conceal the church by its appendages or ornaments is inconsistent, not only with good taste, but with common sense. By good taste, in this instance, we mean allowing the church to have its proper expression, as the principal and most dignified object in the landscape. Thorns, hollies, maples, sycamores, yews, mountain ash, wild service, &c., are suitable trees for the churchyards of very small churches; and the common maple, some species of oaks, such as the evergreen oak, the Italian oak, and some of the American oaks, with a host of other middle-sized trees, are suitable for the churchyards of churches of the ordinary size. There are very few country churches indeed which have even their towers, or spires, sufficiently high to admit of the stronger-growing elms or poplars to be planted in their churchyards. The Oriental plane (not the Occidental) may be especially recommended, on account of the stone-like hue of its bark and foliage, its finely cut leaves, and agreeable shade, for

churches of both the largest and the middle size. The purple beech would harmonise well in churchyards with the dark yew; and the flowering ash is also a very suitable tree.

As all trees in churchyards must be liable to have their roots injured by the digging of graves, this is one grand argument for planting the trees alongside the walks; because in that case there will be always one side of the tree, the roots of which will remain untouched, viz. those which spread under the walk. For the same reason, trees with roots that spread near the surface, such as the pine and fir tribe, should seldom be made choice of. Were it not on this account, the cedar of Lebanon would be one of the most fitting of all trees for a churchyard, from the sombre hue of its foliage, and its grand, and yet picturesque, form; from the horizontal lines of its spreading branches contrasting strongly with the perpendicular lines of a Gothic church; and, above all, from the associations connected with it, on account of its frequent mention in Holy Writ. For all these reasons, it were much to be wished that, in all new churchyards, two or three spots (each of about 30 ft. in diameter) were set apart, not to be broken up for interments, and each planted with a cedar of Lebanon. In many old churchyards in the country, a spot sufficiently large for at least one cedar might easily be spared: and the clergyman or the churchwardens who might plant a cedar on such a spot, and fence it sufficiently while young, would confer a very grand and appropriate ornament on the church, and would deserve the gratitude of the parishioners.

No trees should be planted in a churchyard the natural habit of which is to grow near water, such as willows, alders, &c.; because the expression conveyed by such trees, being that of a moist situation, is, as we have seen, altogether unsuitable for a churchyard. On the whole, the different species of thorns, the common, Montpellier, mountain, and other maples, the wild service, the whitebeam tree and its hybrids, the holly, the yew, the Irish yew, the red cedar, the Oriental arbor vitæ, and a few others, are the most suitable low trees for churchyards; next, those which grow about the height of the Norway maple; and, lastly, those which rank in point of size with the Oriental plane.

In the case of old churchyards crowded with graves and grave-stones, it may be difficult to introduce trees in regular lines, and at regular distances; in which case, a picturesque disposition may easily be effected, by scattering them irregularly, but very thinly, over the surface. It is also proper to observe, that, when a churchyard is to be united with a garden or pleasure-ground, or with a park or paddock, some of the trees characteristic of pleasure-grounds and parks, and already existing in the particular locality, will be required in the churchyard, in order to

produce harmony, and to show that the one scene belongs to the other. On this principle, we would, where the churchyard joined a garden or pleasure-ground, occasionally introduce the gay laburnum, the showy Chinese crab, the perfumed cherry, and similar low trees; and, where a churchyard was to be harmonised with a paddock or a park, the horse and sweet chestnuts, or the oak, elm, or beech, might be admissible, according as the one or other of these trees prevailed in the park around it.

The System of Interments in Churchyards is, in general, very imperfect; and, indeed, in many cases, no system whatever is adopted. The obvious principle, we think, is, to place the tombs near the edge, and consequently near the walks; and to place the graves without marks in the interior of the compartments. For this reason, we would reserve a strip of ground, 10 or 12 feet in width, along both sides of all the walks (which would include the whole of the space between the boundary walk and the boundary wall, these strips should be devoted exclusively to family burial-places, whether merely indicated by corner stones, or railed in, or containing gravestones or tombs. The whole of the compartments being thus bordered by strips for family burial-places or purchased graves, the interior of each compartment might either be laid out in strips parallel to the borders, with gravel walks between; or devoted to graves without marks, laid out in the manner of a garden, with regular alleys of turf between.

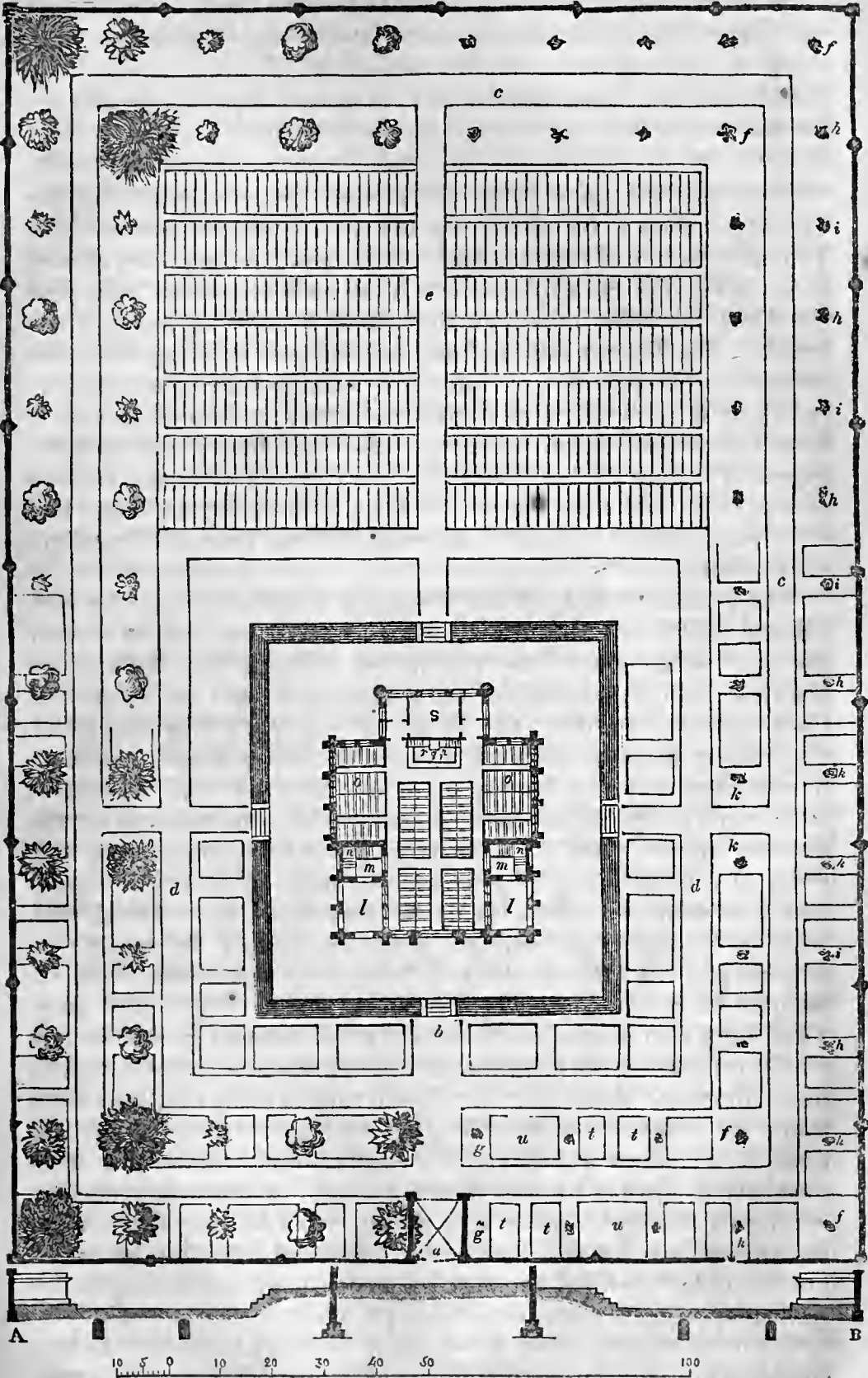
The total space devoted to graves without marks should be divided into such a number of parts as will correspond with the years required, in the given soil and situation, to decompose a corpse and an ordinary coffin. If possible, there should not be less than fourteen divisions; that number of years being sufficient, in almost any soil, to insure decomposition. Then, commencing at one side of one of these fourteen portions, the markless graves may be placed parallel to each other, with rather more than the width of a grave between them; all the graves which may be required during a year being dug to the same depth. At the expiration of this period, the next division may be commenced, whether the one previously in use were filled up or not; and at the end of fourteen years, when the first rotation was completed, the first compartment would be begun on the second time, and graves only made in the intervals between what had previously been graves. In the third rotation, the graves may be made in the same places as the first, there having been an interval of twenty-eight years between the two interments in the same grave.

In using any division of this kind, more especially where the interments are numerous, the sexton should commence at the lower side; because, in all crowded grave-yards, the substratum

is loaded with the moisture of decomposition; and, if the sexton were to work down a declivity, instead of up it, he would find his labours extremely offensive and unwholesome, while the surrounding atmosphere would be contaminated.

In Germany, it is customary, in some churchyards, to bury all the children under a certain age, who are not to have grave-marks, in a compartment by themselves; not only because the waste of ground occasioned by placing large and small graves together is thus avoided, but because it is found that, in the case of children, the ground may be used again much sooner than the ground in which adults have been buried. But we do not think it necessary to recommend such a practice for Britain, where churchyards are, or may be, increased in size with the increase of population.

Fig. 121. is the ground plan of a churchyard laid out agreeably to the foregoing principles; and *fig. 122.* is an isometrical view, supposing the trees to have been ten or twelve years planted, and some of the gravestones and tombs to have been erected. The churchyard is of small size, and is adapted for an agricultural parish, where the majority of the inhabitants are in moderately good circumstances, and whence it is supposed that the superfluous population will migrate to the towns, and leave the number of permanent inhabitants comparatively stationary. There is only one entrance to the churchyard, at *a*, over which there is an archway for the protection of persons waiting during rain or snow. The walk is 8 ft. broad, and proceeds direct to the steps (*b*), which ascend to the platform on which the church stands. The circumferential walk (*c*) is 6 ft. wide, with a border for tombs and gravestones on each side, 12 ft. wide. There is also an inner walk (*d*), of the same width, between which and the platform on which the church stands there is another 12 ft. border for tombs. The space for graves without marks lies on each side of the walk *c*, and is in 14 divisions, with room in each for 24 graves. Each of these divisions is separated by a grass path 2 ft. wide. The two surrounding borders, intended for tombs, are planted with trees 20 ft. apart. At the angles (*ff*), these trees are cedars of Lebanon; at the main entrance (*gg*), they are yew trees; and the remainder of the trees are different species of thorns (*Crataë'gus*) (*h*), and evergreen cypresses (*i*), alternately; except opposite to the side entrances to the platform, and at the angles adjoining the cedars, where there are the yew trees, marked *k k k k*. Whatever tree is introduced on one side of the walk, the same sort is also planted on the other; for the sake of preserving uniformity in the perspective. The number of trees wanted for this churchyard will be 8 cedars of Lebanon, 20 yews, 28 cypresses, and 32 plants of *Crataë'gus*. The latter may be of the following 16 species or varieties:—

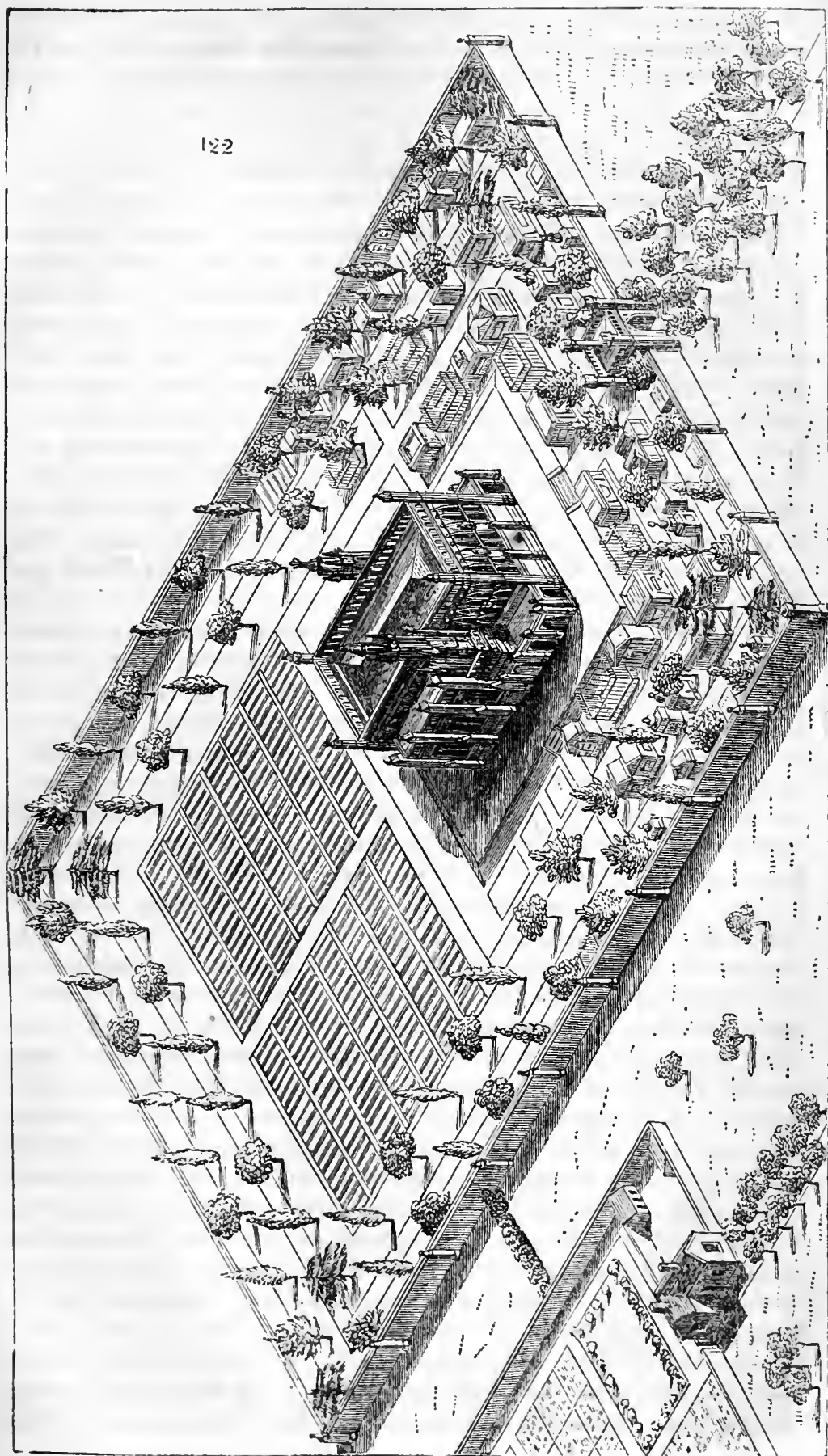


<i>C. coccínea.</i>	<i>C. Arònia.</i>
<i>C. c. corállina.</i>	<i>C. Oxyacántha ròsea.</i>
<i>C. punctàta.</i>	<i>C. O. múltiplex (flòre plèno).</i>
<i>C. Crús-gállí.</i>	<i>C. O. melanocárpa.</i>
<i>C. C. salicifòlia.</i>	<i>C. O. præ'cox.</i>
<i>C. orientàlis (odoratíssima).</i>	<i>C. glandulòsa.</i>
<i>C. tanacetifòlia.</i>	<i>C. heterophýlla.</i>
<i>C. t. Leeàna.</i>	<i>C. flàva.</i>

Half the yews may be of the upright Irish variety; but the cypresses should be all of the common upright-growing kind. In many parts of England, and generally in Scotland, the climate is too severe for the cypress; but in all such places the Irish yew, the Oriental arbor vitæ, or the *Pinus Cémbra*, may be substituted. The *Pinus Cémbra*, from the slowness of its growth, and its narrow conical form, is admirably adapted for a churchyard tree, and is perhaps, next to the Irish yew, the best of all substitutes for the evergreen cypress. The next best is the upright-growing variety of the Oriental arbor vitæ. The common holly is also not a bad substitute; and, if a deciduous cypress-like tree were required, we know of none more suitable than the *Cratægus Oxyacántha strícta*.

The parties wishing to bury in the borders are not to be considered as obliged to erect tombs of any sort, or even to enclose the spot which they have purchased with an iron railing; all that they will be held under obligation to do will be, to confine their operations within the limits of the parallelogram which they may purchase (and which may be either single, as shown in the plan at *t*, or double, as at *u*), and the four corners of which will be indicated by four stones let into the soil at the expense of the parish. The party purchasing the ground may erect any description of gravestone, tomb, or statue, or monument, he chooses, within it; or he may leave it in naked turf, which will be mown or clipped at the expense of the parish; or he may plant it with shrubs and flowers, in which case he must keep it in repair himself. Trees, or shrubs which will grow 15 ft. high, cannot be allowed to be planted on these graves, as they would interfere with the effect of the cypresses and thorns. We have suggested the idea of not rendering it compulsory to erect tombs or iron railings, in order that we may not seem to exclude those who cannot afford the expense of such memorials, from purchasing a grave to hold in perpetuity. A poor man may be willing to afford the price of a grave, in order to preserve the remains of his family from being disturbed; though he might not be able to afford the farther expense of decorating it, by setting up a gravestone, or erecting a tomb.

The Church is on what is supposed to be an improved design, suggested by an architect in the *Architectural Magazine*; and it differs from the ordinary plan of churches in the manner of the



entrances, and also in the general form being nearer that of a square than is usual. The author of this plan adopts it as a principle, "that the point in the outer walls from which each pew, and each class of pews, can be gained by the shortest possible distance, is the best situation for an entrance; and for the following reason: that a person entering a church after the congregation has partly assembled, or, as frequently happens, after service is commenced, may gain his sitting as soon as possible, and avoid at least one half the disturbance otherwise created, by having only half the length of an aisle to traverse." With respect to the general form, this architect considers "that plan the best which concentrates the greatest number of benches or pews within a given distance of the preacher; and hence he prefers a square to a parallelogram." He adds: "Never let the inner entrance door of a church open under a gallery, or the effect of the interior of the church will be irrecoverably lost. If you will have western entrances, and western galleries, contrive to have porches or cloisters, so as to take you to the gallery front before you enter the body of the church." (*Arch. Mag.*, iv. p. 568.) The ground plan in *fig. 121.* is made in accordance with these principles: *l l* are the entrance porches; *m m*, staircases, from which the body of the church is entered through lobbies at *n*. The inner lobbies are formed by two pairs of folding doors, with a space between, equal to the thickness of the walls of the towers which contain the stairs. The inner doors of the lobbies may be glazed with stained or painted glass. If the body of the church be fitted up with benches, the effect would harmonise better with this style of architecture; and, in the opinion of several clergymen with whom we are acquainted, this arrangement would be more suitable to the spirit of Christianity, according to which all are equal in the sight of God. It is worthy of remark, that in the Russian churches there are no benches or seats of any kind whatever, and nothing to prevent the meanest slave from standing by the side of the highest noble, or even of the emperor himself. The portion of the sittings marked *o o*, to the right and left of the pulpit, our architect considers should be free. The communion table is to be placed at *p*, the pulpit at *q*, and the reading desk at *r*. "The vestry and singers' seats (*s*) should be divided from the body of the church by a pierced screen, finished upon the same level with the gallery fronts; and above this screen should be a niche and canopy to the pulpit, designed as much as possible to improve the sound." (*Ib.*, p. 571.) Whoever wishes to enter into farther detail on the subject of churches, and to see plans and elevations on a large scale of the one shown in *fig. 121.*, may consult the *Architectural Magazine*, vol. ii. p. 393.; vol. iv. p. 237. and p. 566.; and vol. v. p. 223.

ART. III. *Hints on Construction: addressed to Architectural Students.*
By GEORGE GODWIN, JUN., F.S.A. and M.I.A.

No. 3.

SINCE the publication of the last paper, we have been kindly invited, in several quarters, to enter more fully into the matter, and to render the series more comprehensive, than was at first proposed; in consequence of which, although more space has been already occupied on the subject of foundations than was intended, we shall venture to add briefly some further remarks under the same head. Before doing so, however, a few words, in regard to the proceedings of the architect previous to the commencement of a building, may not be deemed impertinent or out of place; notwithstanding, probably, they might have been introduced with greater propriety in an earlier paper.

The drawings, although made on the scale of a quarter of an inch to a foot, which, as all know, is the scale most readily understood by workmen, and the most easily measured from with a common two-feet rule, should, nevertheless, be figured in feet and inches, wherever practicable, in order to save the workmen's time, and to prevent those errors that, in one place or another, will always occur, if they be compelled to obtain every dimension by the scale. We know very well that the course here recommended is not by any means generally followed; indeed that, in some cases, when the architect has not quite made up his mind to the size of an opening, or the extent of a projection, it is purposely left to the judgment of the workman, so that if, when done, it should not serve the required purpose, he may be easily called a foolish fellow, and be told to alter it. Alterations, however, generally speaking, tend to lessen the goodness of a construction, and, therefore, if an architect would have his work executed in a perfect manner, and progress satisfactorily both to himself and the tradesman (who ought ever to be considered), he should give all necessary attention to the details at starting, and clearly mark all the dimensions on the drawings.

If the value of a building to be erected exceed a thousand pounds, we would always advise the engagement of a clerk of the works, who should be paid by the architect's employer, and be quite independent of the tradesmen. Should the building be smaller than that to which we have alluded, or the expense of his services during the whole of the works be objected to, the engagement might be limited to the completion of the carcass. The additional expense, in this case, probably, would not exceed twenty pounds, even if the works are performed under contract; and if they are to be measured and valued, or

the materials charged on delivery, a great saving would be effected; while, in both cases, increased excellence in the workmanship would unquestionably be attained. An architect, however indefatigable he may be in his vocation, or however numerous his pupils, cannot be always on the spot at the proper moment to prevent the use of inferior materials, or of defective modes of construction. This is especially the case during the progress of the carcass, when both may be speedily hidden, and when the evil, even if afterwards discovered, cannot be remedied without injury to the general stability of the edifice, or, at all events, delay.

Until within a very short period of time, it was occasionally difficult for the architect to procure an efficient and conscientious clerk of the works, when those whom he had previously employed were engaged. This is now lessened, inasmuch as the clerks of works have formed themselves into a society, which meets at Exeter Hall, with the view, not merely of opening a more ready means of communication, as a body, with architects, than was before practicable, but of offering its members facilities for reference and study, to improve their efficiency as individuals; and we are glad of this opportunity to notice the society, as we think it will prove advantageous to the profession generally. We return now to our subject.

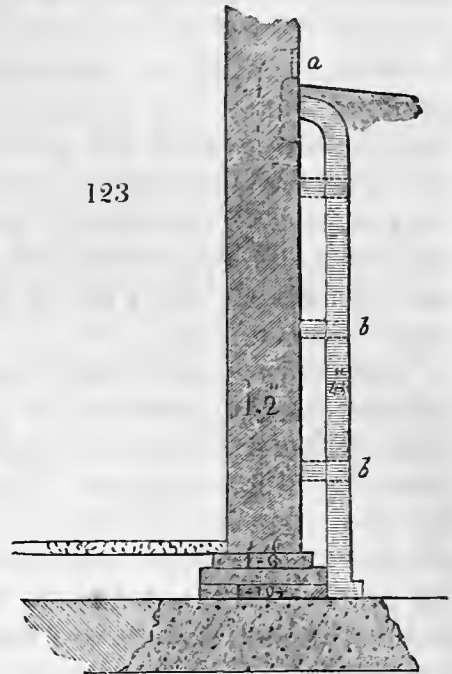
FOUNDATIONS. (*Continued from p. 310.*)

THE ground within the excavations prepared for a building, or the top of the concrete substratum, if one has been introduced, should be made *perfectly level*, because, in the event of any irregularity in this respect, as the materials usually employed to form the walls of houses are of a uniform height, it will be transmitted throughout the building. That is, for example, should the trench for the front of the structure be three inches lower than that for the back of it, as the wall in the front and the wall in the back will each separately be built up to the height marked on the section for the basement story, the consequence of course will be, that when the timbers for the floor are put on, they will be as much out of a level as the ground was in the first instance; and in like manner the defect will occur throughout every floor to the top, unless, being discovered, measures be taken to remedy it.

The footing of brick walls, especially the lowest part of it, should not be formed of less than double courses, lest it be broken off by the superincumbent weight; neither should each set-off project more than a quarter of a brick on each side before that above it, for the same reason. When concrete is used, care in this respect is less important; and for $1\frac{1}{2}$ brick walls,

for instance, two courses $2\frac{1}{2}$ bricks thick, and one course 2 bricks thick, will usually be found sufficient footing. *Fig. 123.* represents the section of such a wall, standing on a concrete foundation formed within a trench, the sides of which are pared down inwards, so as slightly to increase the base.

Around all the walls of the foundation against which ground will lie, a dry area should be formed, in order to prevent dampness within the building. This may be done with a half-brick wall, placed at a little distance from the part to be protected, as represented by the above sketch. The space thus enclosed must be arched over at the top, just below the level of the ground; and if iron

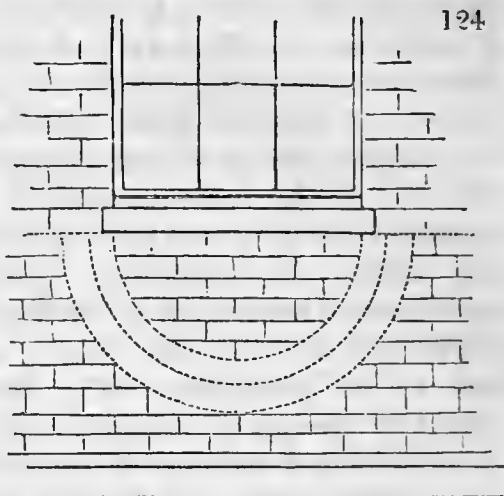


air bricks, or small gratings communicating with the dry area, be introduced, wherever open areas are formed around windows or elsewhere, a free circulation of air will be obtained. Should no open areas occur in the basement story, small flues or throats may be formed at certain intervals within the wall, terminating just above the ground, to receive an air brick, as shown at *a* in the sketch already referred to. The wall of the dry area, although under ground, should not be carelessly executed, as it must necessarily be subjected to considerable pressure, and the workmen should be directed to put in whole headers at certain distances, or bricks placed lengthwise in the direction of the thickness of the wall, as *b b*, so as to stiffen it.

The usefulness of forming inverted arches under openings in foundation walls, for the purpose of equalising the pressure upon the ground beneath a building, is so universally admitted, that to recommend their adoption, or even to mention their application, may seem to many impertinent. We will venture to say, however, it does not always follow, that a precaution is taken because the expediency of so doing is known; or that because a statement has been often made, it may not be usefully reiterated. Experience, we are led to believe, teaches differently.

We will suppose that the front wall of a building has in the lowest part of it six windows, opening at certain distances from each other. In this case, as will be readily seen, the superincumbent weight will be more felt immediately beneath the piers separating these openings than beneath the openings themselves; and should it happen that the foundation is not very good, the

piers would probably penetrate the ground, leaving in its original position less or more of the brickwork beneath the openings, according to the excellence, or otherwise, of the workmanship, and producing ruptures, not merely in the wall, but in the internal plastering, and the stone sills. If, however, an inverted arch, as shown in *fig. 124.*, be turned beneath each of the openings, the pressure will be equally distributed over the whole base of the wall, and the above evil be prevented; because, even should the ground yield, the whole line of wall would, with greater probability, sink together. The parabolic form has been recommended by mathematicians as that best adapted for these arches, and, strictly speaking,

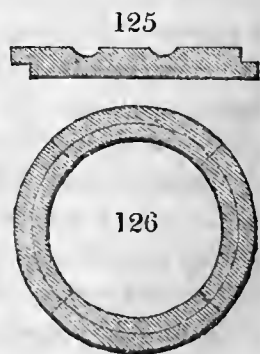


perhaps it is so. Still, for all practical purposes, we should prefer to use semicircular arches, as being perfectly effective, simpler in execution, and as requiring less depth of wall beneath the opening. Segmental arches produce a greater lateral thrust than semicircular arches (increasing with the extent of their radius), and should, therefore, be employed with care. It is hardly necessary to say, inverted arches should be well executed, their usefulness being otherwise in great measure interfered with. They should be formed of two or more 4-inch rims; and, if the wall in which they are placed be out of sight, as is usually the case, should go through its whole thickness. It is advisable, in all instances where they are required, to show them in the drawings (either on the elevations or the sections), for merely a general notice in the specification, "to turn inverted arches where directed," is often disregarded (if no clerk of the works be employed), until it is too late to remedy the omission.

Drains, tanks, and cesspools, although often left undone by the workmen until the completion of the carcass, may with propriety, we think, be alluded to under the present head, inasmuch as it is very desirable in all cases, that the position of the drains should be marked on the plans by the architect before the building is commenced, so that openings for their entrance to the house may be left, and the necessity for cutting down the brickwork, which greatly injures the solidity of the remainder, may be avoided. When practicable, these openings should be made beneath doorways. It is likewise advisable, too, to dig the cesspools and wells in the first instance, not merely to obtain water for the concrete and mortar, but in order to ascertain with

certainly the nature of the soil at a greater depth than is required for the foundations themselves.

The operation of steening and doming wells, as generally performed, hardly requires comment, farther than to say, that an opening covered by a piece of stone should be left in the crown of the dome, in order to give ready means of access. Mr. Hitch, brickmaker of Ware, has introduced a variety of segmental steening bricks, adapted to the ordinary sizes of cesspools and wells, which make very superior work; but as, in the operation of steening wells, the builder now often uses bats and old bricks, which he could not otherwise dispose of, it is not probable that they will be very generally employed. Where, however, durability is required, or where the well is subjected to more than ordinary pressure, as it would be, for example, when formed near the walls of a building, these may be advantageously resorted to. Each is about 12 in. long, and 5 in. in height, and their cost is 2s. 9d. per yard superficial. The top of all cesspools, it seems needless to say, should be below the level of the basement floor. In the construction of drains, it is important to make them sufficiently large, to have as few asperities within-side as possible, and to give them as much inclination, or fall towards the outlet, as can be obtained, certainly not less than 4 in. in every 10 ft. Drains within a building, and which may become choked up, should be covered with pieces of stone, although cylindrical at bottom, that being the form most easily cleansed, as they can then be examined at any particular point without injuring the work, which is not the case if the drains be barrelled. Barrelled drains, however, are stronger than those thus covered, and are, therefore, better adapted for exposed situations. Mr. Hitch, before mentioned, has obtained a patent for a brick drain of simple but excellent construction, of which *fig. 126.* represents a section. Each brick is about 13 in. long, segmental, and wedge-shaped; and is rebated at the ends (as shown by *fig. 125.*, which is a longitudinal section of a single brick), so as to fit together accurately, without much cement. On the top of each, two indentions are formed, in order to lessen the quantity of earth required for making them, and afford a handle to the workmen. Four bricks form a 9-inch drain, as represented by the sketch, which can be executed complete for 11½d. per foot running; and six of them, having a slightly different radius, make a 12-inch drain, costing 1s. 4½d. per foot: in both cases exclusive of digging. The bricks themselves cost about 17s. per hundred, and the amount of labour and cement required is very small.



The necessity of trapping all drains in or near a dwelling, that communicate with sewers or cesspools (in order to keep back bad odours and vermin), although apparent, is sometimes forgotten, which produces serious inconvenience. It is ordinarily effected by forming a small cesspool or receptacle at some convenient point in the drain, below the bottom of the drain itself, and which cesspool, in consequence, must usually remain charged with water. A piece of stone, or, if the drain be small, a large slate, occupying the whole area of the drain, and descending into the water in the cesspool, to within a small distance from the bottom of it, is then introduced and secured, so that nothing can pass from one part of the drain to the other, but through the water.

In sewers or large drains, into which individuals must occasionally descend, for the purpose of examining or cleansing them, there should be occasionally vents without traps of this sort (as in the high roads and elsewhere), otherwise the mephitic vapours and explosive gases, which are generated during the decomposition of animal and vegetable matter, would be confined therein, and the person descending would be suffocated in the one case, or, if he bore a light, blown to pieces, to use a vulgar phrase, in the other.

In many places the preservation of rain water is a matter of some importance; indeed, there are few situations in which, at one time or another, it may not be found exceedingly convenient to have the means of rendering it available for domestic purposes. Tanks to receive it should, therefore, be formed where practicable, which can be done at comparatively small expense in different ways, varying, of course, with the locality, and the degree of excellence required. We have adopted the following mode on several occasions, and have found that it answers the purpose very satisfactorily. The ground having been taken out to the required depth, pave the bottom with one flat course of bricks grouted with cement, and on this set singly two courses of plain tiles in the same material. Form the sides each of two 4-inch walls of bricks and cement, breaking the horizontal joints: and, when completed, render the whole of the interior with cement, 1 in. in thickness. Turn a brick arch in mortar over the tank thus formed, leaving a man-hole 2 ft. square, with proper trimming stones, and a Yorkshire stone paving cover. The suction pipe of a pump placed within a few inches of the bottom, and a small drain communicating with a sewer or cesspool, introduced at the top of the tank to carry off the superfluous water, when there is any, are then all that is required to render the tank fit for use.

ART. IV. *Candidus's Note-Book.*

Fasciculus XII.

“ Sicut meus est mos,
Nescio quid meditans nugarum; et totus in illis.”

I. VITRUVIUS has given us an exceedingly fantastical list of qualifications, insisted upon by him as requisite to an architect, including among them both law and music! Neither is this list less remarkable for omitting all mention of much which it is highly desirable that an architect should be a proficient in; and which, indeed, is indispensably necessary, if he aspires to be accomplished in his profession, and to rank as an artist. To this end, it is necessary that he should understand the æsthetic department of his art thoroughly; be master of its picturesque power, and be able to combine and invent; and also, that he should be well versed in all that comes under the head of decoration. Let us discuss the matter as long as we may, it comes to this at last, that the power of architecture, as a fine art, manifests itself only in æsthetic effect. Effect is its alpha and omega. The first requisite in the art is effect; the second is — effect; the third is — effect. All the rest may be produced by money, and labour, and skill. In confirmation of which, may be instanced St. Peter's at Rome. Provide but the funds, and a fabric equally astounding might be erected by any one; not, indeed, without the requisite constructive skill, but without any of the informing power of art. This, I suspect, will be considered very strange doctrine; and no wonder, since it is so contrary to that by which the world has been so long humbugged in regard to architecture. Humbugged is a strong expression, but is the most apt I can find; nor is it, in my opinion, at all too strong for the occasion. For what can be more preposterous, than, in one and the same breath, to assign to architecture a place among the fine arts, and then tell us that it may be reduced entirely to the merest mechanical rules.

II. Speaking of the *Kur-haus* (public rooms for drinking mineral waters) at Brückenbau, Dr. Granville says, in his *Spas of Germany*: “ This is another of the great architectural works of which Bavaria may well be proud, and the idea and design of which were suggested by the king himself. It is the handsomest building of the kind I have seen in my general excursions to the spas of Germany; and its various decorations are equal to any of the most exquisite productions of the Bavarian artists. On the right, a grand flight of stairs leads to the king's gallery. The pavement is tessellated, and the *plafond* richly painted in fresco. From it depend five gigantic lustres, which are said to give to the interior, on gala nights, the splendour of sunshine; lighting up every part of a building, which, for lofti-

ness, daring proportions, and dimensions, is such as an English people seldom witness in their public edifices. It is the production of Gudensohn (Gutensohn?), a native of Lindenau, in Switzerland; who, having shown, while very young, and at Munich, a considerable taste for architectural drawing, the king of Bavaria sent him, at his own expense, to Italy and Greece, to complete his studies. He is now residing at Wurzburg, and is employed in public works on account of the crown. I did not ascertain what such a public building might have cost in Bavaria; but it would be easy to calculate what sum would have come out of the Exchequer in this country, were such a one to *be attempted*." Malicious Granville! surely, you might have spared John Bull's feelings that bitter and sarcastic remark.

III. How far the representation of the Albany State-House, given in No. 887. of the *Mirror*, is correct, or the contrary, I undertake not to say; but I can fearlessly declare that, if it resembles it, the New State-Hall at Albany is mere carpenter's Grecian in its design. Imagine an Ionic hexastyle with fluted columns stuck up against a two-storied *Holinthwall* house, and you have the image of it at once. Really, such a thing is enough to make one wish Grecian architecture buried ten thousand fathoms deep, beyond the possibility of resuscitation, and the very name of it obliterated for ever. It is the very doggerel of architecture. Why! if such things are to be allowed to pass for Grecian, there is no reason why apothecaries' Latin should not pass for Ciceronian. Taking this building as a sample of its architecture, I should say that America must be the paradise of builders, and the purgatory of architectural connoisseurs.

IV. There is one thing I very much admire in Mr. Bardwell's book, entitled *Temples, Ancient and Modern*; namely, the very complimentary opinion he has passed upon one of the articles he has borrowed from this very *Note-Book*; but, methinks, he might as well have acknowledged from what publication he extracted it. However, as he did not choose to do so, I am at liberty to suppose that he was not in the slightest degree influenced by partiality of any kind.

V. In attempting to apply ancient styles, Grecian or Gothic, to our own actual wants and purposes, we have for the most part fallen into the error of those unskilful translators who give us a harsh, bald, frigid version of an original poem, without showing any other kind of ability than that of being able to make out the meaning of the words. Herein most of those who have been complimentary to classical architects resemble them. When they give us an express imitation of some particular example of an antique order, they fancy they have achieved a prodigy; although in every other part, save the order itself, they should have run diametrically counter to the genius of the

style they profess to exhibit to us. I may spare myself the trouble of pointing out any special instances of this very great and fundamental error, for I may content myself with saying, *Circumspice*; because those who are unable to detect it, when their attention is directed to the subject in general terms, are not likely to be able to feel, were it exemplified by particular cases. While the correctness observed is only partial, the incorrectness indulged in affects the *ensemble* to such degree as to substitute a character quite different from that aimed at, and pretended to be faithfully adhered to. Whatever be the style we profess to follow, if we purpose to follow it as a model, and not as supplying us with elements to be shaped as circumstances may require, and moulded into something different, yet coherent in itself, the least we can do is to be

“ True to its sense, yet truer to its fame ; ”

which admirable line of Denham's ought to be impressed upon the mind of every architect.

VI. Happening to be talking of styles, the other day, with a friend, he observed, “ The one which I can stomach least of any is the *roast-pork* style. I mean that where walls, instead of being rusticated, are merely scored with lines. The effect thus produced is exceedingly monotonous and poor ; and the practice itself quite a modern one, without either beauty or propriety to recommend it. Even were not vertical joints required, as well as horizontal ones, still it would be no more than proper to have the appearance of them, if only for the sake of consistency as well as variety ; more especially when it is considered how many combinations, in point of arrangement, may thus be produced.” This remark led to no discussion or argument between us, because I readily agreed in his opinion ; and, indeed, must say, that, of late, many of our architects have served up “ roast pork ” to us much oftener than need be, or is exactly agreeable. To be sure, the fashion is a remarkably agreeable convenient one, inasmuch as it saves “ a world of trouble ; ” for, instead of any adjustment of the rustics being required, as in the other mode, where it is occasionally attended with considerable trouble, the horizontal scorings, *à la* roast pork, may be drawn in the same time as the same number of lines can be ruled on the leaf of a copy-book.

VII. Mr. Gwilt talks of architecture being “ an art demanded by the necessities of man.” Stuff ! no such thing. He might as well have told us that bird of paradise feathers, Marabout plumes, and diamonds, are demanded by the necessities of woman. What latitude of meaning he gives to the term “ necessities,” I know not, but he certainly uses it as if he had borrowed it from Beau Brummell's vocabulary. Alas ! how many millions are

there who come into the world, and go out of it again, without even suspecting there are necessities which demand art. Myself, for one, had always considered that the element of art was the superfluous, not the necessary; but I suppose I ought now to stand corrected. Still, were I ever so willing to throw myself into the arms of Mr. Gwilt's doctrine, there is one thing "must give me pause;" or, am I to understand that all the rest of the world are fools, when they talk of patronising art, seeing that it lacks not such officious cockering, when it finds its best patronage in our necessities? But will Mr. Gwilt have the goodness to point out to my ignorance how I am to understand him? For example, it would be a task worthy of, and, I doubt not, easy to, his sagacity, to unfold his meaning; or, rather, to unfold his obscurity, and let us see whether it really contains any meaning at all.

VIII. There is hardly any thing so preposterously absurd, as not to have been uttered by some one or other, as a very sagacious remark. I lately met with a notable instance of the kind in a pamphlet, published about sixty years ago, on the *Improvement in the Metropolis*, wherein the writer ridicules the system of enclosing the squares, and converting them into gardens; urging that it is just as bad taste to introduce the imitation of a park or pleasure-ground within a town, as it would be to build a mock town within a park. There may be something in this that sounds, at first, very much like good sense; but we cannot fail to perceive, the next moment, that it is arrant nonsense, and a most illogical antithesis. Arguing after the same fashion, we might say, that it is as absurd for a man who is ill to desire to be cured, as for one who is in health to wish to be ill; or, as being more in point, that it is just as bad taste to improve and widen narrow streets as it would be to contract and deform broad and handsome ones. The same writer alleges, besides, that the trees and shrubs never can thrive in such situations, but will always have a smoke-dried appearance, and be covered with soot. Well, such might, perhaps, be the case in his time; but, if so, our London atmosphere is now wonderfully amended; for, estimating the mere quality of verdure, not quantity, I never beheld any more brilliant, with more of the "emerald" and "velvet," than the turf and foliage, to-day, in Russell Square.

IX. There are some buildings which are calculated only for a distant view; for though, when beheld afar off, they may please, yet no sooner do we come up to them, than we discover them to be greatly inferior to what they first promised to be. The spell is broken, nor is it to be renewed; because, when we again look at them from a favourable distance, we are aware of the illusion. There is no further any room for imagining beau-

ties in store for us on a nearer examination, which we already know do not exist.

X. Like the bee, an architect should be able to extract his nutriment, that is, the *hyle* or material of his art, from the most varied sources; afterwards concocting it into something altogether his own. He should study, not only what is acknowledged to be beautiful, but the contrary also, and that for a double purpose: first, that, by understanding deformity, he may know how to avoid it, and so profit by the bad taste of others; and, secondly, that he may search whether there be any latent germ of beauty concealed beneath ugliness. Even as "the toad wears a precious jewel in his head," so will many a barbarous design be found to contain something valuable: valuable, at least, to him who knows how to turn it to account, and to purify and exalt the base ore into sterling metal. Plagiarisms of this kind are not only excusable, but glorious: they constitute the triumphs of art. In such a process lies its genuine alchemy. Truly, it is an alchemy, in which very few indeed can boast of being adepts; nay, one the possibility of which is hardly suspected. Some, and it will be well if it should not be all, will exclaim: This may be very fine doctrine, but how is it to be reduced to practice? To which I reply, The application of it to practice is one of those mysteries which every man must find out for himself; or else, under what pretence does he arrogate to himself the title of artist, at least, assuming architecture to be one of the fine arts, when he admits, in the same breath, that it depends entirely upon memory and method; and may be reduced to a process a degree more difficult, perhaps hardly a degree more intellectual, than that of laying bricks and mortar? Do I mean, then, to say that rules and elementary knowledge are nothing? Most assuredly not; for then I should be as extravagantly absurd as those who say (not, indeed, in words, for that would be proclaiming to the world an awkward secret, but by their practice, that rules are every thing) not only that their art cannot step without them, but that it cannot step beyond them; although in all other fine arts the case is different; for in them art does not fairly begin until the point is reached where rules stop short, and the artist is thrown upon his own mental resources.

XI. This year's architectural exhibition at the Academy makes no very great display of talent, and least of all on the part of those who are most known among the profession. There are several showy drawings, though but few striking designs, and still fewer that exhibit decided originality in the treatment of their subjects. Most of the best drawings seem to have been furnished by the Architectural Society. Of the members of the Institute, not above two or three names appear in the cata-

logue. How is this? Is it with them "all talkee, talkee?" or, do they contemplate turning their backs upon the Academy, and getting up an annual exhibition of their own? Let us hope that such is really the case; else they may sit in close divan for ever, without at all enlightening the public, or improving its taste. The only excuse for their not doing so is, their supposing that public taste requires no instruction from them. I should incline to fancy that it is not quite so far advanced; and, if for no other reason, because I find the taste of the public so frequently arraigned by architects themselves. But, to leave a topic that would afford matter for a rather long essay, let me ask how it happens that not one of the designs for the Reform Club was forthcoming for the exhibition? Such things would, at all events, have excited some interest; yet there are very few designs indeed of any public buildings of importance now in progress. Such as belong to that class are mostly for churches; nor are there any of them that are at all remarkable. They are nearly every one of them Gothic, and in that style of Gothic which is least of all adapted for modern imitation, namely, the lancet, or very early pointed, which, however interesting genuine examples of it may be, as studies, look chillingly spruce, meagre, cold, and formal, when applied to modern churches or chapels with brick walls, and a few scanty stone dressings. Such a thing is neither picturesque, nor beautiful, nor dignified. It may, indeed, bear the badge of the style, but has no one single quality that gives it a charm: on the contrary, it looks, at the very best, nice and neat, finical, not venerable; a minnikin imitation of what, so imitated, becomes insipid, if not paltry. Yet, what is to be done, if those who have the management of such matters insist upon having Gothic churches, and the cheapest Gothic that can be manufactured for the occasion? Truly, I know not; but I suspect the public are not quite so enlightened yet as they might be.

ART. V. *The Cheapside Obelisk.* By T.

"A HANDSOME lamp pillar," as the newspapers designate it, has lately been erected at the western extremity of Cheapside; a fact that we announce rather as the text for our remarks, than a matter of intelligence to the public, of whom few are so benighted as not to observe, if they do not appreciate, the amazing advances of civic taste that are now daily developed. That we may not be suspected to belong to such an impenetrable class of architectural wooden spoons, we hasten to pay our tribute of respect, as deep and sincere as we can possibly muster for the occasion, to the genius that imagined, and to the skill that con-

ferred form and station on the splendid object to which we have adverted. Were it, indeed, less highly distinguished than it is, for a combination of all those qualities which, in the opinion of many, constitute the excellence of the classic works of Pericles, for simplicity, unity, massiveness, and homogeneousness, all associated with utility, the object in question would, from the advantageous position that it occupies, not merely solicit, but command, our attention, as well as that of the public at large. But, so far are we from being content with this admission, so far from feeling satisfied with avowing the wonder that we experience, as our lifted eyes survey this monument of civic illumination in our daily passings and repassings, that we feel anxious to testify to the world that we can appreciate, in this instance, the higher beauties of design; and that we have not received our architectural education in Guildhall College for nothing. In the course of that education, we well remember how our youthful ardour was excited by contemplating the Gothic talents that the great master, Dance, had displayed in the reformation of the Guildhall aforesaid; and how our hopeful ambition was flattered by the prospective possibility of immortalising ourselves, after the same fashion, in the hall of some worshipful livery company. We have now arrived at maturer years, and witnessed the progress of local improvement, great and manifold, from the building of the new London Bridge, down to the un-Palladianising of the Mansion-House steps, and the erection of the City School; an edifice to which we are bound to confess the collegiate structures of Oxford and Cambridge, according to our poor conceptions, offer no parallel; though we suspect that, after all, in the Gothic taste, our friend Dance takes precedence of all recent artists in point of *originality*. This City School, indeed, we must remark, ere we leave it, suffers a sad interment in Honey Lane, to the concealment of many of its charms. But temporary obscurity has been too often the lot of worth, though we would hope that, in this instance, that concealment may not be obviated at the expense of *too great* a sacrifice of surrounding property. We say we have watched these, and similar manifestations, not only of the desire for practical improvement, which all must heartily commend, but also of a presumed extension of taste, which all must be expected as absolutely to take for granted. But, many and increasing as have been, of late, the contributions to the architectural splendours of the city, we confess that they left us totally unprepared for the climax at which we have at length arrived, in the possession of the lamp-post that marks the trivia at the western termination of Cheapside. How was our curiosity excited when the first impediments to public traffic gave notice of some intended erection! How was it augmented, when the daily press informed us of the

mysterious discovery on the spot of certain osteological remains, the property of our forefathers ! And how did that excitement increase, as we daily lingered by the way, wondering, in common with small boys and other idlers, at the growth of granite within its screen of scaffolding ! At length the day of its disclosure dawned upon the city ; the lamp-post, pillar, or obelisk met our eyes, in the naked beauty of its tall proportions ; and to the overpowering effect which its contemplation produced upon our senses and judgment must be attributed our inability, at an earlier period, to acquit ourselves thus publicly of our debt of admiration. But enough of the history of our emotions, which we shall endeavour now to keep so far under control as that we may be enabled to present the reader with a brief critical notice of this imposing production. To the wayfaring man of cultivated taste, who has bestowed due attention upon structures similar in destination to the present ; who has noticed the pleasing obeliscal varieties that already adorn our streets in many directions, and has finished his education with a diligent study of the beauties of King's Cross ; the specimen we have now to notice may afford a new and peculiar interest. Unlike the pile of King's Cross, indeed, in amplitude of dimensions, and distinguished by the chastened severity of its style, rather than for that rich multiplicity of parts which captivates us in the former, the erection in Cheapside, when so compared or contrasted, affords us a remarkable elucidation of the mode in which similar and consummate effects may be produced upon our feelings by exactly opposite means. But, not to attempt a parallel between the performances in question, equal as they are in merit, we proceed to observe, more specifically, that the genius which designed the monument in Cheapside is one that happily combines caution with originality. Less gifted minds might have apprehended that there was no extraordinary beauty investing the form of an obelisk, even under the most advantageous circumstances of location ; and that, if it had been otherwise, London already possessed a sufficient number to vie with Egypt herself in variety of their outlines. Again, their love for Continental vagaries might have led the objectors to desire the imitation of some fantastic foreign shaft, with its cinctures, rustications, entwining serpents, and so forth ; or some modification of fountain architecture from Paris or from Rome. Or they might have been such head-strong lovers of innovation as to be content with absolutely nothing ready made, but clamorous for a design showing some new exercise of thought and fancy. Unaffected, however, by the dread of critics and their demands, the artist proceeds in his arduous task. His conviction, that obelisks already erected had answered their purpose to admiration from time immemorial, whether as halting points or lamp-posts, decides the case irrevocably in favour of another

obelisk ; while his originality of invention suggests that a variation in its form may be made with equal novelty and aptitude ; and its distinguishing beauty, therefore, is that it is hexagonal in plan, instead of quadrilateral ; a device more worthy of a hecatomb than were all the discoveries of Archimedes. But to begin at the beginning : the basis of the structure is composed of an ascent of two steps, concentrically circular in their plan, but whose surfaces receive an inclination, or weathering in six faces, answerably to the six sides of the superstructure ; the intersection of which weathering with the vertical face forming the circular boundary or rise of the step, produces an undulation of outline peculiarly novel, and most classically Egyptian. The lines or ridges that result from the concurrence of these six surfaces of inclination are terminated, upon the extreme circumference of the upper step, by as many iron posts (six, to wit), clad in a livery of green paint, and each squiored by its attendant spur-stone, all guarding the access to the granite majesty within. That object may be said to consist of two parts, the plinth and the obelisk proper. The former exhibits a vertical boundary of six plain sides, and a flat top, of such amplitude as to present a commodious seat for those members of our juvenile population who bear greasy burdens, or delight in pecuniary speculation upon a limited scale. The latter, or superincumbent mass (not of boys, but of the obelisk proper), is distinguished, not only by the hexagonal form of its horizontal section, as aforesaid, but by the extreme sharpness of its upward termination ; the etymological acuteness of the architect pointing him to the just conclusion, that an obelisk could not be made too much like a needle. Descending, however, we find one remaining circumstance to notice ; namely, that the shaft bears at mid-height, on every alternate face, a lamp, presenting one towards each of the three public ways that converge to this point. The manner, also, in which these lamps are attached to the shaft is worthy of observation. The sustaining arms exhibit no superfluous length or weight of metal ; no meretriciously entwining ornaments court the eye ; plain as the shaft into which it is thrust, each straight bar stands forth and clutches its charge. All is solidity and simplicity ; so much so, that the structure, properly speaking, possesses the rare merit of not exhibiting a single moulding. Hence its great superiority over works that are dependent upon such adventitious and ill-devised means of decoration.

We trust we have given the reader a tolerably accurate notion of the general features of this piece of composition. Should not the description satisfy or convince him, we refer him to the original ; should that fail, we consign him to his own obtuseness, wishing him “ all manner of prosperity, with a little more taste.” We, on the other hand, are animated by the hope that an object

of such beauty may not long be a rarity among us ; but that, as occasion offers, similar erections may rise in many places to grace our streets. We think, indeed, that we discern one even now about to form the centre of attraction in the vicinity of the church of St. Mary Woolnoth. That such antiquated productions as that church should be brought into a disadvantageous contrast with monuments like these, must be matter of satisfaction to every enlightened critic and artist. Hawksmoor and Wren, and all pupils and masters of their school, have had their day; and the present is not an age for the resuscitation of the architectural superstitions of former years.

For our own part, we do not care how many houses are taken down in prominent public situations, if only we can be assured that it is to make room for granite obelisks, such as that which has formed the subject of our present remarks. Neither can we refrain from admiring the consummate judgment of the designer, who has here so well placed the creation of his immortal genius in contiguity to buildings of moderate architectural pretensions, admirably calculated to serve as a foil to the beauties of his own production ; so that on the approach, in either direction, whether by the steeple of Bow Church, the façade of the Post Office, or the varied masses of St. Paul's, the mind of the beholder is not so much prepared for, as surprised by, the climax of art that presents itself to his attention in the configuration of this granite obelisk. We rejoice, too, that citizen discernment is as inflexible as the material by which it is here commemorated ; and that the powers that be, having once resolved that any such object will "do well enough," are not likely to revise or reconsider their decision, trembling like vanes before the breezes of a fastidious criticism. Possessed of such an invaluable monument, we are possessed of it for ever ; and entertain no doubt that, in its transmission to remotest posterity, it will carry conviction to the minds of all who might otherwise have remained sceptical as to our attainments in art at the present era.

It is too truly observed that many of the finest specimens of architecture in the metropolis are so closely surrounded by buildings, not to say absolutely buried in holes and corners, that no person can obtain that advantageous view of them which their excellences deserve. But it is also stated, with great confidence, by many, that, when we do get the opportunity of placing on an eligible and conspicuous site an erection intended to be magnificent on a large scale, or picturesque on a small one, we are at once at a loss to know what to do with it : our wits will not consort with our opportunities, or our opportunities will not accommodate themselves to our wits ; and the forced fecundity of our inventive genius is productive of nothing but some hideous

monstrosity, or some contemptible abortion. But away with all statements so derogatory to the honour of British art and of citizen connoisseurship! Away with reproaches, which, if at any time they were credible, are henceforth and for ever obsolete! Let the Cheapside obelisk, with mute eloquence, vanquish the gainsayers, and awe them into a kindred silence. Let the blazing emanations that nightly encircle it dispel their ignorance of those mighty resources for our architectural regeneration which are at the command of the honourable the Commissioners of Pavements and Sewers, whenever they please to call spirits from that vasty deep which to them peculiarly appertaineth.

But why should we further panegyrisé a work whose excellence must be recommended to almost every mind by intuitive conviction? We forbear: we are dazzled by the contemplation of what is, in truth, a pile of precious stones; or, taken collectively, a huge gem of inestimable worth; respecting which our sole ground of regret is, that it cannot be preserved under more safe custody in Guildhall, to be produced only on the annual return of the ninth of November, and worn as part of the gorgeous insignia of office by all future Lord Mayors of London, who shall be in favour of its preservation.

July, 1838.

REVIEWS.

ART. I. *Architectural Illustrations and Account of the Temple Church, London.* By Robert William Billings, Associate of the Institute of British Architects. London, 1838.

MR. BILLINGS informs us that, though many picturesque views of the Temple Church have appeared at different times, there are none which convey a connected idea of it in an architectural sense. The present work is an attempt to supply this deficiency; and Mr. Billings has succeeded in a manner which must be alike gratifying to himself and to every architect. The engravings are on a sufficiently large scale to be useful in practice; and all the details are most clearly and definitely given. It is for want of details of this kind, Mr. Billings observes, that so small a number of edifices have been erected in the same style. He only refers to one, viz. the Roman Catholic Chapel of St. Mary, St. John's Wood, erected from the designs of J. J. Scoles, Esq., architect; and this, he says, exhibits internally "one of the most successful adaptations of the architecture now illustrated."

In a literary point of view, the most remarkable part of this volume is an article by Edward Clarkson, Esq., entitled "An Essay on the Symbolic Evidences of the Temple Church." Mr.

Clarkson discusses the question, "Were the Templars gnostic idolators, as alleged?" and the following extract will show the conclusion at which he arrives : —

"The Temple Church, built and instituted by the Templars in London, was a copy (varied, doubtless, in many of its details) from the temple at Jerusalem, of which the purpose of their institution as a military order gave them the possession and guardianship. Of that temple at Jerusalem, the preceding temple of Solomon supplied, beyond any question, the archetypal, if not the material, model. Just so, the Mosaic Ark in the wilderness furnished the ideal, and in a great measure the architectural, model. The close affinity between the masonic forms and ideal associations there adopted, and the masonic forms and ideal associations connected with the pyramids, has been repeatedly urged, and, as we think, demonstrated. It has been maintained, or proved, by the writer of this paper, in lectures on the great pyramid, published during 1825 and 1826, in the *Classical Journal*, and it has been latterly corroborated and proved by a work on the same subject by the defunct and gifted author O'Brien, in a work *On the Round Towers of Ireland*. The leading proposition in those lectures maintained that the great pyramid was the first great lodge of ancient Egyptian freemasonry. All the forms and measures adopted there, both externally and internally, were symbolical of certain dogmas, religious, social, scientific, or philosophical ; that is, freemasonry. Freemasonry remains the same, whether in a Pagan or a Christian garb ; whether at Eleuseis, at Memphis, at Crotona, in the caves of Zoroaster, or in the secret chambers and galleries of the Christian temple at Jerusalem.

"Its doctrines, its rites, and its initiations, corrupted, varied, or improved by the various nations to which its missionaries conveyed them, contained the traditions, the predictions, and the means of instruction of the first patriarchal church, which united all the families and languages of mankind. The fragments of that compact religious framework, though broken up and rendered dissimilar by the various channels through which they passed in their transfer, exhibit every where the most startling and irresistible evidences of their original singleness, and of their family identity. The same masonic evidences of a single patriarchal church are to be found at the same time in different hemispheres, and on the opposite sides of the globe. They are to be found equally at Stonehenge, and at the recently discovered Mexican city of Palenque.

"This being fairly inferred, we have a right to infer, also, that the new temple established on the capture of Jerusalem by the Crusaders would exhibit the masonic forms and signs and symbols peculiar to religious freemasonry in all parts of the world ; but especially peculiar to the Temple of Solomon, the site of which it occupied, and which it superseded or succeeded. That structure is destroyed, and with it those symbolic evidences of religious freemasonry are obliterated ; but, fortunately, we have under our own eye, in London, a shoot from the parent stem ; a daughter of the Eastern mother, a transcript of the same architectural model to be equally found in the Mosaic Ark, and in the Temple of Solomon. Does any one doubt that every measure, form, and symbol in the ark, and in the ancient temple, conveyed, like the symbols of freemasonry, moral, social, and religious meanings ? No scholar, and no architect, will doubt it. Certainly, no classical individual, who is aware of the fact, that all the great temples in Asia Minor and in Egypt, especially those to which theatres for the dramatic shows of the mysteries were attached, were built, or superintended, by a recognised body of masons as well as freemasons, called the Dionysian brethren. If, therefore, every sign, symbol, or measurement in the ancient ark and temple spoke a clear language to the instructed adept or brother, though not to the uninitiated profane, it is obvious, provided our logic be correct, that we must seek in the architectural copy, that is in the Temple Church in London, for symbols, signs, and measurements, expressive of the doctrines, social, moral, or re-

ligious, of the Knights Templars, whose masonic lineage has been briefly, though, we think, undeniably, traced to its masonic origin, in the first Egyptian great lodge. *That position we have now to investigate. That truth it is our firm conviction, by an appeal to tangible evidences, open to every one's eye, and palpable to every one's touch, we shall be able to manifest and prove."*

ART. II. *A Treatise on Roads; wherein the Principles on which Roads should be made are explained and illustrated by the Plans, Specifications, and Contracts made use of by Thomas Telford, Esq., on the Holyhead Road.* By the Right Hon. Sir Henry Parnell, Bart., Honorary Member of the Institute of Civil Engineers. 8vo, second edition. London, 1838.

THE deservedly high character of this work renders it altogether unnecessary for us to say anything in its commendation. It is, indeed, an excellent work, whether we consider it with reference to its principles, or its practical directions, clearly and elegantly illustrated as they are by beautiful engravings. Every country gentleman, who wishes to know how to construct roads himself, or understand when they have been properly constructed for him by others, ought to study this book. As a tribute to Sir Henry Parnell, we cannot avoid making the following quotation from the preface. It is an extract from the life of Thomas Telford, Esq., written by himself:—

"It has already been stated that, on Lord Oriel's retiring from public life, Sir Henry Parnell, Member of Parliament for Queen's County, in Ireland, and since for Dundee, in Scotland, was not only the principal instrument in carrying Holyhead Road bills through Parliament, but has ever since continued to be the most efficient of the commissioners. Fully impressed with the importance of rendering the communication between London and Dublin perfect, he has, during the last twenty years, applied himself to this subject, for effecting which both talents and management have been required, as well as perseverance.

"1st, He had to convince government of the advantages to be derived from the scheme, and induce them to furnish the means of defraying the expense; 2d, To procure the consent of all the numerous, and in some instances turbulent, bodies of local trustees, upon an extensive line of road; and, 3d, To arrange the sea communication between Holyhead and Dublin; for which purpose the harbour of Holyhead was improved, in a manner which has rendered it serviceable, as a harbour of refuge, far beyond the immediate purpose of protection of the packets; and a harbour has also been made at Howth, northward of the city of Dublin. All this he has effectually accomplished; and, by extending his services beyond the usual duties of a parliamentary commissioner, and therein devoting much of his time to the personal inspection of practical operations, he has acquired so perfect a knowledge of road-making, in all its branches, as has enabled him to produce the most valuable treatise which has appeared in England on the history, principles, and practice of that species of national improvement."

MISCELLANEOUS INTELLIGENCE.**ART. I. *Institute of British Architects.***

MAY 21. 1838. — H. E. Kendall in the chair.

Elected. G. E. Laing, as Associate; J. G. Wilkinson, author of various works on Egypt, as Honorary Fellow; Signor Valadier, and Signor Canina, Rome, and Herr Hessemer, Frankfort, as Honorary and Corresponding Members.

Presented. Antichi Vasi dipinti della Collezione Feoli, descritti da Secondiano Campanari: 8vo; Rome. Original Drawings, by P. Cortona, J. B. Corneille, &c., from Sir J. D. Stewart. Walker's Examples of Gothic Architecture, Part 3.: folio. An Eight-day Clock with Oak Case, from B. Vulliamy, Esq. Philosophical Transactions for 1837. Rapport sur les Pénitenciers des E'tats-Unis, par MM. Blouet. Twenty Pounds for the Travelling Fund, from H. Rhodes, Esq.

Mr. Renton's paper on Iron was continued: its forms of Section, and comparative Value.

The following letter, dated Athens, March 27. 1838, was lately received by T. L. Donaldson, Esq., secretary to the Institute of British Architects, from A. Rizzo Rangabé, secretary to the Archæological Society of Athens.

"Greece cannot behold, without lively interest, that she continues to be the object of meditation and research to the learned of Europe; though still weak, and, only beginning to enter into a state of regeneration, she cannot unite her efforts to those of civilised nations for the advancement of science and art; she has, at least, the slight consolation of contributing to that end by the remembrance of her past splendour; and of presenting, in her scattered ruins and mutilated monuments, models of taste always worthy of imitation.

"She is well aware how much she owes to these remains of ancient art, and she feels a religious respect for them. From them burst the first electric spark which animated the Greeks to emulate the memory of their ancestors, and led them on to battle; and it is to them, also, by their contributing to excite in our behalf the philanthropic feelings of foreign nations, that we attribute in a great measure the generous assistance, which we have received from strangers. After these obligations, you will not, like so many others, accuse us of exaggerated veneration towards these reliques. Though we are jealous of them, and, considering them as so many palladiums of our independence and of our nationality, we will not allow them to be carried away from the places they were intended to fill; and we see, on the contrary, with regret, that more than one fine monument cannot be restored, because its decorations have been carried away and dispersed in the museums of foreign countries. There are many skilful architects and learned men in the Institute of British Architects, who are very capable of judging how different would be the artistical and local interest of these statues and reliefs, if they occupied the places for which they were destined by the master spirits who executed them, instead of being coldly arranged in rooms of so modern a taste, that they, as well as the wintry regions of the North, appear to protest against the antique forms and disposition of the statues.

"But, though we are proud of our treasures of antiquity, we are not selfish with respect to them. On the contrary, Government has ordered their periodical publication; and this is done in the *Archæological Journal*, of which I take the liberty of sending you a copy of the three first numbers, to place in the library of the Society. These essays will no doubt fall far short of the expectations of Archæologists; but let it be remembered that we are still without the books most necessary for the study of archæology in Greece. It is but justice to observe, farther, that this journal only professes to make the public acquainted with the antiquities which are discovered by excavations made at the expense of the government, or of individuals. We

have only to remove the surface of modern Greece to discover ancient Greece; and it was thought that it would not be uninteresting to give as much publicity as possible to the discoveries made from day to day. A private society has added its efforts to that of the government. You will find the by-laws added to the copies of the *Archæological Journal*. The members of this Society wish to know if you, and some of the members of the Society of which you are Secretary, will allow your names to be enrolled in the number of its honorary members, and that you will be so kind as to send me the names of these gentlemen, that their diplomas may be prepared.

“M. Gropius is the only one remaining of your former acquaintances at Athens: he begs me to send his compliments and respects to you. Lusieri is no more; and I have just heard that M. Fauvel, whom I did not know personally, has closed his laborious life at Smyrna. Athens is now very different in appearance to what it was when you knew it. It is no longer an Oriental bazaar, erected with the fragments of marbles of ancient monuments, but an European city, rising by the side of the Hellenic city; so much has been done to restore and display the ancient monuments in the midst of the modern buildings: but if you come you will never be a stranger here; Athens is the city of men of taste and science. With best thanks for the invaluable wishes you express for my country, whose prosperity, alas! is in a great measure as yet but a wish, I have the honour to remain your very humble and obedient servant,—A. Rizzo Rangabé, Counsellor to the Ministry of Public Instruction, Secretary to the *Archæological Society*. Athens, March 27. 1838.”

The Archæological Society of Athens.—The proceedings of the first meeting of this body, held on the 10th of May, 1837, in the Acropolis, have been published, and contain some very interesting particulars. M. J. Rizzo, counsellor of state, was in the chair; and M. A. Rizzo Rangabé opened the business by an address, of which the following is an abstract:—

“Assembled under these gigantic monuments of Hellenic art, which strike us with astonishment even in their ruined state, we cannot but be moved with feelings of emotion caused by the thought of their destruction, which recalls the downfall of our nation and the days of our unhappy slavery. On the other hand, we may well be proud to allude to our religious respect for these noble remains of antiquity, and to the care which the government bestows upon their preservation and restoration, which proceeds successfully under our eyes, and which seems to connect the present period with that of Pericles and Cimon. Can there be a better proof of our political regeneration? As long as our country was debased in slavery, we were forgotten by all, and dead to history; the powerful of the world divided our spoils; a firman of our conquerors was sufficient to despoil this venerable Parthenon now before us. Greece was not consulted as to the destiny of her monuments, and the Athenian was obliged to use the sacrilegious saw upon some of the immortal works of Phidias, destined to embellish foreign museums. But we are now risen from our prostrate condition; we are an independent nation; and our government has turned its attention to the preservation of those treasures of ancient art, which still remain to us; and its solicitude in this respect has been crowned by the happiest results. The discovery by Dr. Ross of the temple of Victory without wings has led to its almost complete reconstruction at the entrance of our Acropolis. We now also owe to MM. Pittáki the restoration of the Propylea, no longer encumbered by the barbarous buildings of our despots. A vast number of inscriptions, among which are those relating to the arsenal of the Piræus, the Long Walls, and the tributary cities of Athens, have been found by these two gentlemen. But these excavations, repairs, and reconstructions create expenses, and to a considerable amount. The government has done much, but cannot do all; it therefore behoves us to contribute all we can to extend and accelerate these archæological labours; such is the aim of our Society. What friend of the name, the glory, and literature of ancient Greece will

withhold his support? Shall we flatter ourselves in vain that the antiquarians of Europe, animated by Philhellenic love, will lend us their counsels and co-operation? In fine, shall it be a vain illusion, if we hope that we may one day see, through the efforts of this Society, those masterpieces of art resume their original destination, instead of continuing in their present inappropriate position in the cold regions of the North?"

The election of the following members of the committee then took place:— J. Rizos Néroulos, as President; J. Coconis, Vice-President; A. Rizzo Rangabé, Secretary; A. Compatis, Treasurer; and Messrs. Pittáki, Gropius, Epitis, and Photilas, as ordinary members.

The following are the rules of the Association:—

1. That the name be the "Archæological Society," and its residence Athens.
2. The object, that of contributing to the discovery, re-erection, and restoration of the antiquities of Greece.
3. Every person, whether residing in Greece or abroad*, is eligible as a member.
4. The minimum annual contribution of each member to be fifteen drachms (twelve shillings); but further contributions in money, books, or other objects connected with the purposes of the Society, will be duly acknowledged. The Society names also as honorary members those foreigners who are distinguished for their archæological attainments. The members have a diploma with their names inscribed.
5. The members, who may be at Athens, will meet once a year in the Acropolis, to choose the officers and committee.
6. The functions of the committee are, to determine, in conjunction with the conservator of the museum, the excavations and restorations which are to be undertaken. No works are to be done without the cooperation and consent of that functionary, who also may be requested by the committee to undertake some of the excavations; for which purpose he will be furnished with the necessary funds; and he will afterwards account for the manner in which they have been applied. The committee will authorise the execution of works, which have been proposed and approved. They will also cause a scientific examination to be made of the antiquities which may be found, and will be in communication with the archæological commission named by the government, and which has the privilege of publication.
7. Relates to the administration of the funds.
8. Directs the yearly publication of a report of the labours of the committee to be distributed among the members.
9. Provides that all objects found are to become the property of the national museum, but they are to be inscribed as having been discovered at the expense of the Society.

The government having approved of the Institution, published the following ordonnance, with the view to encourage it:—

That the conservator of the Central Museum shall be in communication with the committee of the Society with respect to the archæological proceedings of this latter, and shall undertake the direction of some of its works when invited so to do, and its public duties allow.

The archæological commission will assist the Society with its advice, whether directly or indirectly, through the medium of the conservator of the museum, whenever requested.

The members of the Society have free admission to the archæological library. One hundred copies of the *Archæological Journal* shall be given gratuitously to the Society for distribution among the members.

* The Archæological Society being now in communication with the Royal Institute of British Architects, the Secretaries of this latter body will receive the subscriptions of such of our countrymen as feel disposed to promote the Archæological Society, and transmit the amount to Athens.

The annual report of the proceedings of the Society shall be printed without charge at the royal press.

The names of those who have continued to be members during three years shall be inscribed on a marble column at the entrance of the museum.

The Society have published, in the months of October, November, and December of last year, numbers of their *Transactions*, which reflect great credit upon their judgment and skill. The following summary of their contents was read at the ordinary meeting of the Institute of British Architects, on the 9th of July, having been translated by Col. W. M. Leake, from the original in modern Greek.

The three numbers of the *Transactions of the Archæological Society of Athens*, reflect great credit on this infant Society. The first contains a brief account of all the proceedings, which have occurred in furtherance of the intentions of the government of Greece in favour of the antiquities of Athens. Excavations were commenced on the 22d of April, 1833. On that and a few following days, six sculptures and three inscriptions were found. Among them was a piece of the eastern frieze of the Parthenon: it stood between Nos. 18. and 19. of the British Museum. Another contained a portion of a figure which is continued in No. 20. All the others found about this time belonged to the northern side: one, at the foot of the north-east angle, appears to have been the second of the north side. It represents men in long garments leading oxen, like those of the southern side (57—62. B. M.), and appears to have been the second stone of the north frieze; not the first, because, according to Carrey, this had, at the eastern end, two women following those in 21. B. M. Another, according to the drawing of Carrey, followed 22. B. M.: upon it were three men clothed, and bearing hydriæ on their shoulders, followed by an ἀύλητης, partly hid by a man stooping to lift a hydria (this Visconti mistook for a boy driving a hog). A third portion of the frieze had four old men on foot in long garments; who, according to Carrey, followed four ἀύληται and four λυρισται. Four other portions of the frieze contain chariots like those of the southern side (53—56. B. M.): one is a quadriga; the others doubtful. Nos. 24, 25, 35, 36. of the British Museum complete, with this new one, the five chariots of Carrey. Of the inscriptions found about this time was that important one relating to Andoleon, King of Pæonia. At the end of 1833, 500 fragments or monuments, more or less complete, had been collected; and among them the inscription relating to the Long Walls, the existence of which is supposed to have been known to M. Pittáki, as early as 1829. (See *Soc. Archæol. di Roma, Bulletino di Marzo*, 1835.) In the same year, bounds were marked off around the Acropolis for future diggings. In 1834, an excavation was made in a garden to the north of the Peiræus; and many inscribed sepulchral stones and sculptures were found. In September, 1834, 72,000 drachms * were voted for works to be executed between that time and 1837, the main object of which was to be the rebuilding (ἀνέγειρος) of the Parthenon, and the restoration of the Acropolis to the peaceful Muses (εἰρηνικαὶ Μούσαι). The modern fortifications were to be destroyed; the citadel was to cease to be a place of arms; Ross and Klentze were to direct the works. About this time, the ἄγιον βῆμα, which had been built at the eastern end of the Theseium, when it was converted into a church, was removed; a second iron ring was placed on its north-west column (the first had been placed by the Society of Philomusi of Athens, soon after the column had been struck with lightning in 1820); the fifth column of the southern side was strengthened in the same manner; the temple was covered with Maltese stone, and made useful for the reception of antiquities. Towards the end of April, 1835, the Acropolis having been evacuated as a citadel; an excavation was begun on the north-west side of the Parthenon, and carried in some parts 20 ft. and more below the third or bottom step of the stylobate; frusta of columns of nearly the same size as the

* About 3000*l.*; but not more than half this sum has yet been expended.

Parthenon were found*; many fragments of painted terra cotta, among them a Medusa's head (of this a coloured lithograph is given in No. 3.), parts of the γείσσωμα of some large building (also lithographed); and many small statues and fragments which had belonged, probably, to a temple standing on or near the site of the Parthenon. On the western side, near the north-west angle, the natural rock was found at a small distance below the surface; at the angle was found the portion of the frieze, with the men on foot, as before mentioned. The excavations at the Propylæa produced the Temple of Victory almost entire, with the exception of the four portions of the frieze in the British Museum. In October, 1835, Mr. Ross resigned his office, and M. Pittáki was appointed.

Between October, 1835, and February, 1836, the northern wing of the Propylæa was opened and cleared of its modern masonry, and the same was done to the great portico of the Propylæa. Further clearings around the Temple of Victory displayed steps extending from its basement to the pedestal of Agrippa; but whether these steps extended lower down the hill, has not yet been determined. About this time, some excavations to the north-east of Port Cantharus brought to light twelve sculptures, some sepulchral inscriptions, and 120 vases. In 1837, the road from the Propylæa to the Parthenon, cut obliquely in the rock, was found, with many sculptured fragments, and some inscriptions, chiefly of Roman time. The clearing of the Erechtheum was now begun. Almost all the πλίνθοι of the northern wall were found, and seven pieces of the γείσσωμα. These were rebuilt, with a portion of new work. The eastern side was in like manner cleared; and here, also, some new work was required to repair damage done by the Christians in making an ἄγιον βήμα, when they converted the temple into a church. On all the new work was inscribed "Ἐκτίσθη, 1837." The southern wall was also rebuilt; and here was found, among other pieces of sculpture, the fifth Caryatis (the sixth is in the British Museum), which has erroneously been supposed to be in the Vatican. It is broken into many pieces, some of which have not yet been found. Some repairs were made to the portico of Caryatides, and the Caryatis which was thrown down in the siege was replaced. On the western side, two of the four columns have been re-erected, and have been united by an epistylum. A third has been put together, and the wall has been strengthened with temporary work, until its remains are found. The floor of the temple has been partly cleared, and sufficiently to show that Stuart was mistaken in some of his opinions concerning it. The heats of 1837 interrupted this work. To the north of the Thesæum, the foundations of a large building were found, with an inscription, alluding to some work of the sculptor Eubulides. Near the gate of the new Agora, on the south-west side, were discovered, considerably below the present surface, remains of the walls of some large building, forming a right angle.

The second number of the Journal contains a summary of the observations of M. Pittáki, on a journey in the Morea; in which I do not find any thing of importance. The remaining part of this Number, and all the third, is occupied with inscriptions given lithographically, as well as in the cursive character, with notes. This part of the work is highly creditable both to the artist and the editor, M. Rangabé. — *W. M. L. June 9. 1838.*

A letter of the 21st of May informs me that the architects were then engaged in examining the *entasis* of the stylobate. It appears that the columns not only stood inclined inwards, but that they stood upon a *convex* platform, and that the architecture had a similar curve, though probably not on the upper face; this, however, it seems, had not yet been determined. — *W. M. L. June 22.*

* It would be desirable to know whether they were of the partially fluted kind, of which frusta are seen in the northern wall of the Acropolis, and which are nearly of the same diameter as those of the Parthenon.

THE ARCHITECTURAL MAGAZINE.

SEPTEMBER, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *The Poetry of Architecture.* By KATA PHUSIN.

No. 3. THE VILLA. (Continued.)

II. *The Lowland Villa.*—*England.*

ALTHOUGH, as we have frequently observed, our chief object in these papers is, to discover the connexion existing between national architecture and character, and, therefore, is one leading us rather to the investigation of what is, than of what ought to be, we yet consider that the subject would be imperfectly treated, if we did not, at the conclusion of the consideration of each particular rank of building, endeavour to apply such principles as may have been demonstrated to the architecture of our country, and to discover the *beau idéal* of English character, which should be preserved through all the decorations which the builder may desire, and through every variety which fancy may suggest. There never was, and never can be, a universal *beau idéal* in architecture, and the arrival at all local models of beauty would be the task of ages; but we can always, in some degree, determine those of our own lovely country. We cannot, however, in the present case, pass from the contemplation of the villa of a totally different climate, to the investigation of what is beautiful here, without the slightest reference to styles now, or formerly, adopted for our own “villas,” if such they are to be called; and, therefore, it will be necessary to devote a short time to the observance of the peculiarities of such styles, if we possess them, or, if not, of the causes of their absence.

We have therefore headed this paper, “The Villa, England;” awakening, without doubt, a different idea in the mind of every one who reads the words. Some, accustomed to the appearances of metropolitan villas, will think of brick buildings, with infinite appurtenances of black nicked chimney-pots, and plastered fronts, agreeably varied with graceful cracks, and undulatory shades of pink, brown, and green, communicated to the cement by smoky showers. Others will imagine large, square, many-windowed masses of white, set with careful choice of situation exactly where they will spoil the landscape to such

a conspicuous degree, as to compel the gentlemen travelling on the outside of the mail to enquire of the guard, with great eagerness, "whose place that is;" and to enable the guard to reply, with great distinctness, that it belongs to Squire ——, to the infinite gratification of Squire ——, and the still more infinite edification of the gentlemen on the outside of the mail. Others will remember masses of very red brick, groined with stone; with columnar porticoes, about one third of the height of the building, and two niches, with remarkable-looking heads and bag-wigs in them, on each side; and two teapots, with a pocket-handkerchief hanging over each (described to the astonished spectator as "Grecian urns"), located upon the roof, just under the chimneys. Others will go back to the range of Elizabethan gables; but none will have any idea of a fixed character, stamped on a class of national edifices. This is very melancholy, and very discouraging; the more so, as it is not without cause. In the first place, Britain unites in itself so many geological formations, each giving a peculiar character to the country which it composes, that there is hardly a district five miles broad, which preserves the same features of landscape through its whole width.* If, for example, six foreigners were to land severally at Glasgow, at Aberystwith, at Falmouth, at Brighton, at Yarmouth, and at Newcastle, and to confine their investigations to the country within twenty miles of them, what different impressions would they receive of British landscape! If, therefore, there be as many forms of edifice as there are peculiarities of situation, we can have no national style; and, if we abandon the idea of a correspondence with situation, we lose the only criterion capable of forming a national style.†

* Length is another thing: we might divide England into strips of country, running south-west and north-east, which would be composed of the same rock, and, therefore, would present the same character throughout the whole of their length. Almost all our great roads cut these transversely, and, therefore, seldom remain for ten miles together on the same beds.

† It is thus that we find the most perfect schools of architecture have arisen in districts whose character is unchanging. Looking to Egypt first, we find a climate inducing a perpetual state of heavy feverish excitement, fostered by great magnificence of natural phenomena, and increased by the general custom of exposing the head continually to the sun (Herod. *Thalia*, xii.); so that, as in a dreaming fever, we imagine distorted creatures and countenances moving and living in the quiet objects of the chamber. The Egyptian endowed all existence with distorted animation; turned dogs into deities, and leeks into lightning-darters; then gradually invested the blank granite with sculptured mystery, designed in superstition, and adored in disease; and then such masses of architecture arose as, in delirium, we feel crushing down upon us with eternal weight, and see extending far into the blackness above; huge and shapeless columns of colossal life; immense and immeasurable avenues of mountain stone. This was a perfect, that is, a marked, enduring, and decided, school of architecture, induced by an unchanging and peculiar character of climate. Then, in the purer air, and among

Another cause to be noticed is, the peculiar independence of the Englishman's disposition ; a feeling which prompts him to suit his own humour, rather than fall in with the prevailing cast of social sentiment, or of natural beauty and expression ; and which, therefore, there being much obstinate originality in his mind, produces strange varieties of dwelling, frequently rendered still more preposterous by his love of display ; a love universally felt in England, and often absurdly indulged. Wealth is worshipped in France, as the means of purchasing pleasure ; in Italy, as an instrument of power ; in England, as the means " of showing off." It would be a very great sacrifice indeed, in an Englishman of the average stamp, to put his villa out of the way, where nobody would ever see it, or think of *him* : it is his ambition to hear every one exclaiming, " What a pretty place ! whose can it be ?" and he cares very little about the peace which he has disturbed, or the repose which he has interrupted ; though, even while he thus pushes himself into the way, he keeps an air of sulky retirement, of hedgehog independence, about his house, which takes away any idea of sociability or good-humour, which might otherwise have been suggested by his choice of situation. But, in spite of all these unfortunate circumstances, there are some distinctive features in our English country houses, which are well worth a little attention. First, in the approach, we have one component part of effect, which may be called peculiarly our own, and which requires much study before it can be managed well, — the avenue. It is true, that we meet with noble lines of timber trees cresting some of the larger bastions of Continental fortified cities ; we see interminable regiments of mistletoed apple trees flanking the carriage road ; and occasionally we approach a turreted *château** by a broad way, " edged with poplar pale." But, allowing all this, the legitimate glory of the perfect avenue is ours still, as will appear by a little consideration of the elements which constitute its beauty. The original idea was given by the opening of the

the more refined energies of Greece, architecture rose into a more studied beauty, equally perfect in its school, because fostered in a district not 50 miles square, and in its dependent isles and colonies, all of which were under the same air, and partook of the same features of landscape. In Rome, it became less perfect, because more imitative than indigenous, and corrupted by the travelling, and conquering, and stealing ambition of the Roman ; yet still a school of architecture, because the whole of Italy presented the same peculiarities of scene. So with the Spanish and Moresco schools, and many others ; passing over the Gothic, which, though we hope hereafter to show it to be no exception to the rule, involves too many complicated questions to be now brought forward as a proof of it.

* Or a city. Any one who remembers entering Carlsruhe from the north, by the two miles of poplar avenue, remembers entering the most soulless of all cities, by the most lifeless of all entrances.

tangled glades in our most ancient forests. It is rather a curious circumstance, that, in those woods whose decay has been chiefly instrumental in forming the bog districts of Ireland, the trees have, in general, been planted in symmetrical rows, at distances of about twenty feet apart. If the arrangement of our later woods be not quite so formal, they, at least, present frequent openings, carpeted with green sward, and edged with various foliage, which the architect (for so may the designer of the avenue be entitled) should do little more than reduce to symmetry and place in position, preserving, as much as possible, the manner and the proportions of nature. The avenue, therefore, must not be too long. It is quite a mistake, to suppose that there is sublimity in a monotonous length of line, unless, indeed, it be carried to an extent generally impossible, as in the case of the long walk at Windsor. From three to four hundred yards is a length which will display the elevation well, and will not become tiresome from continued monotony. The kind of tree must, of course, be regulated by circumstances; but the foliage must be unequally disposed, so as to let in passages of light across the path, and cause the motion of any object along it to change, like an undulating melody, from darkness to light. It should meet at the top, so as to cause twilight, but not obscurity, and the idea of a vaulted roof, without rigidity. The ground should be green, so that the sun-light may tell with force wherever it strikes. Now, this kind of rich and shadowy vista is found in its perfection only in England: it is an attribute of green country; it is associated with all our memories of forest freedom, of our wood rangers, and yeomen with the "doublets of the Lincoln green; with our pride of ancient archers, whose art was fostered in such long and breezeless glades; with our thoughts of the merry chases of our kingly companies, when the dewy antlers sparkled down the intertwined paths of the windless woods, at the morning echo of the hunter's horn; with all, in fact, that once contributed to give our land its ancient name of "merry" England; a name which, in this age of steam and iron, it will have some difficulty in keeping.

This, then, is the first feature we would direct attention to, as characteristic, in the English villa: and be it remembered, that we are not speaking of the immense lines of foliage which guide the eye to some of our English palaces, for those are rather the adjuncts of the park than the approach to the building; but of the more laconic avenue, with the two crested columns and the iron gate at its entrance, leading the eye, in the space of a hundred yards or so, to the gables of its grey mansion. A good instance of this approach may be found at Petersham, by following the right side of the Thames for about half a mile from Richmond Hill; though the house, which, in this case,

is approached by a noble avenue, is much to be reprehended, as a bad mixture of imitation of the Italian with corrupt Elizabethan; though it is somewhat instructive, as showing the ridiculous effect of statues out of doors in a climate like ours.

And now that we have pointed out the kind of approach most peculiarly English, that approach will guide us to the only style of villa architecture which can be called English, — the Elizabethan, and its varieties; a style fantastic in its details, and capable of being subjected to no rule, but, as we think, well adapted for the scenery in which it arose. We allude not only to the pure Elizabethan, but even to the strange mixtures of classical ornaments with Gothic forms, which we find prevailing in the sixteenth century. In the most simple form, we have a building extending round three sides of a court, and, in the larger halls, round several interior courts, terminating in sharply gabled fronts, with broad oriels divided into very narrow lights by channeled mullions, without decoration of any kind; the roof relieved by projecting dormer windows, whose lights are generally divided into three, terminating in very flat arches without cusps, the intermediate edge of the roof being battlemented. Then we find wreaths of ornament introduced at the base of the oriels*; ranges of short columns, the base of one upon the capital of another, running up beside them; the bases being very tall, sometimes decorated with knots of flower-work; the columns usually fluted, wreathed, in richer examples, with ornament. The entrance is frequently formed by double ranges of these short columns, with intermediate niches, with shell canopies, and rich crests above.† This portico is carried up to some height above the roof, which is charged with an infinite variety of decorated chimneys. Now, all this is utterly barbarous as architecture: but, with the exception of the chimneys, it is not false in taste; for it was originally intended for retired and quiet habitations in our forest country, not for conspicuous palaces in the streets of the city; and we have shown, in speaking of green country, that the eye is gratified with fantastic details; that it is prepared, by the mingled lights of the natural scenery, for rich and entangled ornament, and would not only endure, but demand, irregularity of system in the architecture of man, to correspond with the infinite variety of form in the wood architecture of nature. Few surprises can be imagined more delightful than the breaking out of one of these rich gables, with its decorated entrance, among the dark trunks and twinkling leaves

* As in a beautiful example in Brasen-nose College, Oxford.

† The portico of the schools, and the inner courts, of Merton and St. John's Colleges, Oxford; an old house at Charlton, Kent; and Burleigh House, will probably occur to the mind of the architect, as good examples of the varieties of this mixed style.



of forest scenery. Such an effect is rudely given in *fig. 127*. We would direct the attention chiefly to the following points in the building:—

First, it is a humourist, an odd, twisted, independent being, with a great deal of mixed, obstinate, and occasionally absurd, originality. It has one or two graceful lines about it, and several harsh and cutting ones: it is a whole, which would allow of no unison with any other architecture; it is gathered in itself, and would look very ugly indeed, if pieces in a purer style of building were added. All this corresponds with points of English character, with its humours, its independency, and its horror of being put out of its own way. Again, it is a thoroughly domestic building, homely and cottage-like in its prevailing forms, awakening no elevated ideas, assuming no nobility of form. It has none of the pride, or the grace of beauty, none of the dignity of delight, which we found in the villa of Italy; but it is a habitation of every-day life, a protection from momentary in-

convenience, covered with stiff efforts at decoration, and exactly typical of the mind of its inhabitant: not noble in its taste, not haughty in its recreation, not pure in its perception of beauty; but domestic in its pleasures, fond of matter of fact rather than of imagination, yet sparkling occasionally with odd wit and grotesque association. The Italian obtains his beauty, as his recreation, with quietness, with few and noble lines, with great seriousness and depth of thought, with very rare interruptions to the simple train of feeling. But the Englishman's villa is full of effort: it is a business with him to be playful, an infinite labour to be ornamental: he forces his amusement with fits of contrasted thought, with mingling of minor touches of humour, with a good deal of sulkiness, but with no melancholy; and, therefore, owing to this last adjunct, the building, in its original state, cannot be called beautiful, and we ought not to consider the effect of its present antiquity, evidence of which is, as was before proved, generally objectionable in a building devoted to pleasure, and is only agreeable here, because united with the memory of departed pride.

Again, it is a life-like building, sparkling in its casements, brisk in its air, letting much light in at the walls and roof, low and comfortable-looking in its door. The Italian's dwelling is much walled in, letting out no secrets from the inside, dreary and drowsy in its effect. Just such is the difference between the minds of the inhabitants; the one passing away in deep and dark reverie, the other quick and business-like, enjoying its everyday occupations, and active in its ordinary engagements.

Again, it is a regularly planned, mechanical, well-disciplined building; each of its parts answering to its opposite, each of its ornaments matched with similarity. The Italian (where it has no high pretence to architectural beauty) is a rambling and irregular edifice, varied with uncorresponding masses: and the mind of the Italian we find similarly irregular, a thing of various and ungovernable impulse, without fixed principle of action; the Englishman's, regular and uniform in its emotions, steady in its habits, and firm even in its most trivial determinations.

Lastly, the size of the whole is diminutive, compared with the villas of the south, in which the effect was always large and general. Here the eye is drawn into the investigation of particular points, and miniature details; just as, in comparing the English and Continental cottages, we found the one characterised by a minute finish, and the other by a massive effect, exactly correspondent with the scale of the features and scenery of their respective localities.

It appears, then, from the consideration of these several points, that, in our antiquated style of villa architecture, some national

feeling may be discovered; but in any buildings now raised there is no character whatever: all is ridiculous imitation, and despicable affectation; and it is much to be lamented, that now, when a great deal of attention has been directed to architecture on the part of the public, more efforts are not made to turn that attention from mimicking Swiss *châlets*, to erecting English houses. We need not devote more time to the investigation of *purely* domestic English architecture, though we hope to derive much instruction and pleasure from the contemplation of buildings partly adapted for defence, and partly for residence. The introduction of the means of defence is, however, a distinction which we do not wish at present to pass over; and, therefore, in our next paper, we hope to conclude the subject of the villa, by a few remarks on the style now best adapted for English scenery.

ART. II. *On the Philosophy of Architecture.* From the German of Weinbrenner. Translated for the "Architectural Magazine" by M. L.

WEINBRENNER was born in Nov. 1766, and died in 1826; he resided, during the greater part of his life, as an architect at Carlsruhe, where he built the theatre, and erected a great number of other buildings, public and private. The theatre at Leipsig, the Conversations-haus, or Ridotto, at Baden, the church at Scherzheim, another at Langensteinbach, the Riding-house at Heidelberg, and General Miloradovitch's seat in the Crimea, were also designed by him. He is the author of various publications; but the principal one is his *Architektonisches Lehrbuch*, in two vols., imperial folio, from which we have had this article translated, and two or three others which will follow, in order to complete the subject. Weinbrenner had numerous pupils afterwards eminent in their profession, among whom were Moller, Heger, and M. De Châteauneuf. The translation is strictly literal, and the greatest attention has been paid to giving the exact meaning of the author.

PART I. ON FORM AND BEAUTY.

Weinbrenner's Introduction.—I HAVE begun the first part of the first book of my Principles of Architecture, which embraces the principles of drawing, with a newly arranged theory of geometrical drawing, which I lay before my pupils, and practise them in, before any other sort of work, that the learner, by exercising himself in drawing, may be led to think.

In the same manner, I will now endeavour in this third book, which is to embrace the study of the higher walks of architecture, to set forth in this and the two following parts, an equally

scientific doctrine of forms and ornaments, which I have hitherto put into the hands of my pupils with success, as a foundation in the transition from material construction (*materialien Konstruktion*) to the higher art of building; and, by this means, to furnish the young artist with an exalted model (*ästhetische Norm*) for a correct judgment of forms and their ornaments, according to their various uses and connexions.

It is usual, when the young architect begins the study of the higher walk of his art, to lay before him the orders of architecture, or small designs to copy, by which his capacity of invention of form is crushed; because, in general, he is only required to make a faithful imitation of the original before him, without the due consideration of the harmonious agreement of the form to the end in view.

By making this sort of copies, young men acquire, no doubt, mechanical dexterity in drawing, but no judgment of form and architectural proportion (*Verhältnisse*); as their attention is only directed to drawings without import (*Gehalt*), or to something acknowledged as beautiful, but which does not convey to them an idea of the beautiful and suitable (*Zweckmässigen*).

In order early to call forth the sense of form (*Formensinn*) in the young artist, I have drawn up this particular part, and endeavoured to take the ideas, by which a judgment of a perfect and beautiful form is to be acquired, from existing objects.

Although it is not possible to give all the forms which the architect is required to produce, yet the most essential forms of the art may be reduced to simple principles, and applied.

With this view I divide the plastic objects of art into the forms of necessity (*Formenraum des Erfordnisses*), and those of preservation (*Formen der Erhaltung*) from external and internal destruction; and endeavour to give the fundamental principles for forming a judgment on these two chief forms, when they are at the same time æsthetical, in their dependence on each other.

With respect to the numerous forms of necessity, where a distinction of form often becomes necessary, only through a slight difference in the use, or on account of the material, I have considered the form of our common drinking-vessels, which are almost daily before our eyes, as the most suitable for a model; as they furnish us with the best judgment of form, and come next in order to a multitude of beautiful and classical ancient urns, to the beauty and elegance of which the eye becomes readily habituated.

Drinking-vessels and urns are for the most part formed out of one piece of material, such as clay, glass, or metal; while, on the contrary, architectural forms must be constructed of various pieces artfully united, as in the wooden vessels (*Gefässe*) [figures of which will hereafter be given]; but this union of several or various materials does not alter the principles here

adduced for a judgment of forms; only, in the application of them, the technical knowledge of the construction of single materials is requisite, in order that, by the combination of various substances, the forms may be as harmonious and analogous to each other as is required in the elements of the individual substances in the vessels.

The ancient Indians and other nations, who formed their buildings out of the rocks, might be able to give them a form, without regard to the art of combining materials; yet that form could not be so rich and graceful as among the Greeks and Romans. Beauty by no means excludes simplicity; neither should well-directed richness be exchanged for overloading; and variety only increases our interest, when it is united in works of art as an organic whole, or serves as an appropriate ornament to it.

Thus, for example, the head of the Apollo Belvedere is beautiful of itself, and we should be satisfied with it, if we only possessed the head; yet the entire figure of the god is far more beautiful and perfect than a detached part of it, although that part may be perfect in itself.

I am well aware that besides these principles of form (*Formenlehre*), much might still be said on the plastic art (*bildende Kunst*); and that the theory of the beautiful, herein touched upon, is capable of still further developement: but it is not my intention here to form an æsthetical compendium, but to lead the clever young artist while studying, to more extensive reflection on the necessary judgment of forms in art, as we possess no elementary book of the doctrine of forms and æsthetics, so necessary to the rising artist; and, besides, the doctrine of form is indispensable in the study of architecture.

If Hogarth's work on beauty did not refer chiefly to the comic and grotesque, the artist might find in it much instruction in form and beauty; but, for this reason, it is unfit for use, and, in many respects, even dangerous to the young artist, because he might easily be misled by the ludicrous views therein set forth. Bouterwek, Eberhard, Fernow, Heydenreich, Kreutzer, Pölitz, Richter, Schreiber, Winkelmann, and other learned men, on the other hand, have written comprehensive and instructive æsthetical theorems on art, which embrace the philosophical contemplation of the beautiful in the widest sense of the word. These works furnish the artist with comprehensive æsthetical instruction, which I cannot give so circumstantially; I confine myself, therefore, to the views and opinions of forms, indispensable to the artist, which I shall hereafter explain further, as I proceed with my book, and show the various application in detail of the principles here brought forward. It must not be expected that in this treatise any mathematical recipe for the invention of

beautiful forms is to be found; because that is an effect of imagination and feeling; and plastic as well as oratorical forms cannot be created without natural gifts. My remarks on beauty, therefore, must chiefly guide the judgment in invention, and disclose to the rising architect a path and view into the illimitable province which he is entering upon.

As the poet must be born and not made, so it is with the architect (*Plastiker*) and other artists. Every one is not capable of making a good use of the best instruction, or even of forming an opinion on subjects of taste (*Gegenständen des Gefühls*).

CHAP. I.

NOTIONS AND IDEAS ON FORMS AND BEAUTY, PARTICULARLY IN THE PLASTIC ART.

1. FORM is a word applied to every thing that is surrounded and enclosed in space (*im Raum*), in surfaces with lines (*Flächen*), and in solid bodies with surfaces. Thus, every figure which is presented to the eye in one or other of these ways possesses form.

2. In the first case, such a representation is called pictorial (*bildlich*), and in the second plastic (*plastisch*).

3. In both cases, lines surround the contour; and the æsthetical intrinsic worth of its form is shown by them; and, *vice versa*, what is to be formed anew is regulated by the same principles, as far as such a production of art is to be carried out.

4. Although it is difficult to give a satisfactory definition of beauty, yet it may be said in general, that the beauty of a visible object consists in the outline which fills a certain space (*räumlichen Umrissen*), and that colour or the intrinsic value (*Gehalt*) of the material gives no beauty to the production, only that by them the beauty is more or less heightened by a casual charm, and the expression occasionally strengthened.

5. As the beauty of an object is known by the outline, it must be observed, that

i. Not all, but only noble, objects are capable of beauty; and that

ii. The outline must represent the object faithfully, and perfectly, in all its parts.

6. Beauty consequently consists in the perfect agreement of the form to the end in view; and that form is perfect when the object appears accomplished, so that we could not wish any thing added to, or removed from, the figure.

7. Accordingly, that figure is beautiful, in the outline of which a suitable consummation (*Vollendung*) appears. The suitability itself will be determined by the notion (*Begriff*) of the figure.* Hence it appears that there must be different types of

* Kant, when he opposes the beautiful to the sublime, says that the beautiful must please without any interest; that beauty is the form of the suitable-

beauty for feminine and manly beauty; youth and age; the temple and the palace.

8. In true beauty the objective and subjective meet, or, rather, they are both one. When this unity is wanting, the beautiful is not recognised, or the ugly is considered beautiful. A work of art is only interesting when it engages our ideas and feelings.

9. That the harmony, or rather the agreement, of the lines with the purpose of the object is an essential condition of beauty, and that mere forms without reference to an object awaken no agreeable feeling in us, and are only like dead signs, may be perceived in every unmeaning line. Besides this, the beauty, and even the difference of beauty, from the individual suitability of both, might be shown by comparing the form of Apollo with that of Hercules. These two statues, however different they may be in form, we consider beautiful; because they perfectly express the different notions of Apollo and Hercules, without our being able to form a higher idea of either. The same may be said of the statues of Venus, Juno, and Minerva, which embrace the highest ideal of feminine beauty, wisdom, and dignity of form, &c.

10. What has been here remarked on the plastic imitation of the human species, (the beauty of which is estimated by the innate suitability, or according to the ideas of dignity, strength, grace, ornamentalness, &c., excited,) is applicable also to the imitation of other animated objects; as well as to plants, landscapes, or objects which supply the wants of man, such as furniture, buildings, &c.

11. As the labours of the painter and sculptor are directed to the study of nature, and as, to insure the beauty of their works, they must endeavour to catch and retain the *beau idéal*, or rather the maximum of perfection in form, of their objects from animate or inanimate nature; so the architect has much greater difficulty in discovering the beautiful, as he has no copy for his objects, and he has to compose his forms, partly from the manifold human necessities, and partly from ideas, as his inventive faculty produces and combines them.

In this respect, fine forms in architecture, and what is con-

ness of an object, which can be discovered in it, without the representation of an end in view: that beautiful is what universally pleases. Accordingly he thus defines the beautiful: beautiful is that which pleases by its form, or that which by its form sets the imagination and understanding in a free, harmonious, and playful activity, united with pleasure. The beautiful in art (*Kunstschöne*), which Fernow represents in his *Roman Studies*, part i. sect. 3., may indeed be as much contained in his ambiguous words as a beautiful figure in a block of marble; but the sagacity of an Œdipus would be required to decipher the first; and for the development of the latter a Phidias would be necessary to remove what did not immediately belong to the figure.

nected with it, are much more difficult to invent, than in the other plastic arts (*bildenden Künsten*); because, when the objects have no reference to a previously known object, the form must be invented or created out of nothing.

12. Thus, there is a beauty of nature, and a beauty of art. To copy the beauty of nature cannot be called being an artist, in the highest sense of the word, as only a mechanical talent is required for it. The beautiful in art depends on an idea, and therefore the true artist must possess, together with the talent for technical execution, that genial power which revels freely in rich forms, and is capable of producing and animating them. It is by this that the merit of the artist and his productions is to be judged; and these cannot be properly estimated among those barren copyists of nature, which we find so many of our flower, portrait, and landscape painters, &c., to be. But the artist stands much higher in the scale, who, though a copyist of visible nature, is capable of seizing it with poetical feeling, and representing it in its more dignified sense; such, for example, as Raphael, Poussin, Claude Lorraine, &c.

13. Those who in art consider all objects indifferent, and who think it unimportant whether a work of art only pleases the eye, or also interests the mind, must necessarily award the highest value to mechanical or technical finish, and prefer the Flemish (*niederländische*) to the Italian school. On the contrary, a school has arisen in our times in which the idea (*die Idee*) only is valued, and the finishing of form (*Vollendung der Form*) is considered rather blamable than praiseworthy. In this, as in every other case, the error lies in extremes.

14. That an object may be agreeable and even perfect in itself without being beautiful, we may convince ourselves by a comparison of the Last Supper of Lionardo da Vinci, with a drinking scene of Teniers; as the latter, notwithstanding its excellent execution which charms the eye, at most only deserves admiration for mechanical skill and industry which it displays, while the former really exalts us, and absolves us from every vulgar feeling. In the same manner, for example, we do not consider a toad beautiful, although it is formed by nature perfect as a toad; and the same may be said of other ill-shaped animals, which will always offend the eye and feelings of every one, unless it be those of a naturalist, to whom the whole circle of nature is interesting.

15. As these examples serve for the pictorial (*bildliche*) representation of animated nature, so in architecture the temple is to be distinguished from the pigsty; and although both may be perfectly and suitably built, yet the pigsty, from its nature, is not capable of any beauty, and it would be even absurd and highly reprehensible if it were beautiful, as may be said of all

other farm buildings. A temple, on the contrary, which is only to awaken noble and sublime feelings, must be so ordered as to call them forth by its majestic forms.

16. Besides the difficulty of the task of inventing a suitable form for a given object, the lines which the architect has at his command are limited essentially to two; viz. the straight (*gerade*), *fig.* 128.; and the circular (*Zirkellinie*), *fig.* 129.

17. From the straight and circular lines an infinite number of lines may, indeed, be constructed and formed; but in the whole these can again be reduced to three combinations; viz.

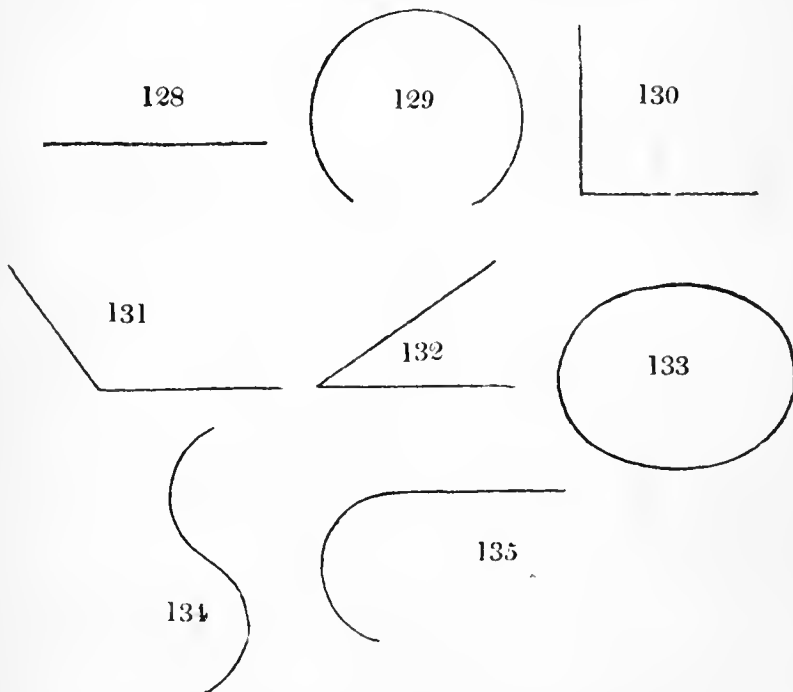
i. When the straight line is joined to another, either

a. At a right angle (*rechtwinklich*), *fig.* 130.;

b. At an obtuse angle (*stumpfwinklich*), *fig.* 131.;

c. At an acute angle (*spitzwinklich*), *fig.* 132.;

ii. Parts of circles towards each other form ellipsis-like figures; and, running from each other, cornice-like (*Karniess-artig*) figures. (*figs.* 133. and 134.)



iii. When united lines (such as straight and circular lines) run into each other, as in *fig.* 135.

With these limited lines the architect has to form his plastic works, and to apply them to the best advantage, according as the object requires.

18. If we allow that beauty lies in form alone, the material is not taken into consideration; but, as the latter should be in harmonious unison with the perfection of the object, a disagreeable feeling, prejudicial to the beautiful, is awakened in us, when we see the contour (*Umrisse*) struggling with the nature of the material. Thus, for example, the form of a round wooden ball,

when the fibres of the wood are seen intersected by the form of the body, causes a disagreeable feeling, which we do not perceive in a ball of marble, glass, &c. We see from this, that the nature of the material, by which the former becomes visible, offends; and that, therefore, almost every material possesses a particular fitness, or peculiar capacity, for this or that form.

19. From the old Grecian and Roman orders, it will be perceived that the beauty of the pillars is to be looked for only in the just proportion of the individual parts, without regard to the material; but if we propose a shaft of stone, wood, or iron, of the same thickness and height as those of the ancient Greek or Roman orders; to support an equal weight, it is contrary to common sense to make the iron pillar as thick as the wooden one, and that as thick as the one of stone, &c.

20. When these different pillars are painted or enveloped with the same colour, and by this means are caused to appear of the same material to the eye, they no longer offend; because the material is concealed from our view by the colouring, and our eye is directed only to the pure proportions of form; as in a drawing of mere outlines, when the material of the object is not taken into consideration.

21. Although colours are not essential to beauty, and it is often indifferent what coloured material we make use of in our works, yet they often contribute greatly to the charm of the object, when they are so chosen as either to enrich it, or to give it the effect of light and shade. Thus, for example:

i. White marble, gypsum, &c., are the best materials for statues, bas-reliefs, &c.: because these masses show the form of the object in light and shade most clearly, and no confusion is caused by dark colours.

ii. Metal, porcelain, &c., are best adapted for our eating and drinking vessels; because these materials, from their fineness and shining property, show the least impurity.

iii. Crystal and glass, from their purity and transparency, are the best materials for drinking and other vessels, where the colour or the form of the objects contained within often produces a greater charm from the transparency of the glass, &c.

22. Plastic objects of art, such as the human figure, animals, and fruit, when coloured like nature, often cause horror, or even disgust, according to the degree of illusion. When the same objects are of a one-coloured mass or colour, we have not this feeling; because the production does not appear through momentary illusion as the work of nature, without being able to prove itself such. Art agreeably deceives us, without coarsely cheating us; she does not sham a real object in her productions, but makes it visible to us, as an ideal object. Clothed wax figures, or wax, wood, or stone, fruits coloured, may do very

well for play or amusement, but can never excite a high degree of pleasure (*ästhetisches Wohlgefallen*). .

23. In this manner colours may create disgust, or even horror, according to the object on which they appear, or if they awaken a disagreeable train of ideas. Thus, for example, the brown colour of Malaga becomes offensive, when we think of tincture of rhubarb; and the most beautiful glow of sunset may fill us with terror, if we have shortly before seen this colour in a conflagration, in which we or others were in danger. Thus, even the colour of the objects must be in unison with all our sensitive ideas (*sinnlichen Begriffen*), that we may not be disturbed by it in the contemplation of beauty, or have our attention called off to a secondary idea.

24. The case is very different with pictorial representations on surfaces, which, as it were, reflect objects as in a glass. As these representations, or pictures, on surfaces are only seen from one point of view, and have not space on all sides like sculptures, colours are here a means of optical illusion, and tend to give to the whole surface an apparent depth, and to bring objects forward, or remove them to a distance. They also enliven objects; and yet they can never so far deceive us, as to make us forget the form and the presence of art, or try to seize the object, or take it for real. Apelles is said to have painted cherries so naturally in a picture, that the sparrows flew to them; but, as Göthe justly remarks, the illusion was no proof that the fruit was extraordinarily well painted, but rather shows that the sparrows were real sparrows, and had no notions of art and painting.

OF PROPORTIONS (*VERHÄLTNISSEN*) IN THE PLASTIC ART.

25. We must also remark that single mathematical forms are, indeed, perfect, but cannot be called beautiful, because they have not sufficient richness in their outline, and are without importance, such as cubical bodies, spheres, cylinders, &c. These forms can therefore only interest us by ornaments, and other forms, which they may have on their surface. On the contrary, it is repugnant to the laws of the beauty of the object, to overload it, or to put more on it than is requisite to make it complete. Such objects are, therefore, most beautiful when seen in half light or by moonlight; because in the faint light the minute parts remain concealed from the eye, and only the principal parts are prominent. Many of our Gothic buildings are of this description.

26. As beauty of form presupposes a consummation (*Volendung*) suitable to the object, with due regard to the material and the outward destination; and as a regularly formed mathematical figure (as will be further shown) cannot be called beautiful on account of its uniformity, but is only perfect, since it

wants, also, exalted signification (ästhetische Bedeutsamkeit), and points to no other intellectual idea of form, but only to itself; so, on the other hand, richness of form (Formenreichhaltigkeit), without which neither the beautiful nor the agreeable and suitable in life can exist, requires in itself, —

i. Proportion and relations (Verhältnisse) of the sizes (der Grössen) ;

ii. Symmetry; and,

iii. Eurhythm, or agreement (Wohlgereimtheit), of single parts and lines with each other.

27. Relation (Verhältniss), or the proportion of individual parts to the whole, is, in the plastic art, what time, or the proportion of the individual tones of the melody, is in music. Considered singly, the whole scale of tones, or the above-mentioned lines, without variation in size (Abwechselung von Grössen), have to us no particular value as art; but if the lines appear as various relations of quantity (Verhältniss Grössen) directed to an end, which the plastic art requires for the visible form, and music for the melody, and which, perhaps, vary in proportion to each other, as 1 to 2, 1 to 3, 3 to 4, &c., and thus form transitions from straight lines to curved ones, according to various directions and angles, then they are for forms what cadences or transitions from one strain to another are in music.

28. In the plastic art, it is necessary that the eight given forms of straight, curved, and united lines should be understood and applied as readily in a suitable manner to every object, as the seven principal tones in music are to melodies; and measure of form must be communicated to the lines, as ingenious and attractive as is communicated to the tones by the measure of time.*

29. In music, the unity of measure, or the division of time of the piece, is mostly in the proportion of 1 to 2, 1 to 3, or 1 to 4 (common time); and the smaller portions of time are always halved from $\frac{1}{4}$ to $\frac{1}{8}$, $\frac{1}{16}$, $\frac{1}{32}$, $\frac{1}{64}$; and, according to this, the passing time of the whole, by means of the measure into which the individual quantities of the tones (Tongrössen) of the melody are divided into time, is measured. In the plastic art, in which the sizes (Grössen) do not pass over, but remain, and are seen together, it may be supposed that such a proportion of

* From the similarity of measure which architecture has in common with music, Professor Görres calls architecture a frozen music (gefrorene Musik); and other learned men have endeavoured to set down music in feet, inches, lines, &c. But architecture which depends on space, and music which depends on time, cannot be treated throughout on the same principles; otherwise a good architect must be a good musician, and, *vice versa*, a good musician a good architect, which is not the case. They are related to each other with respect to effect, but very different as organic structures (Gebilde).

unity to the whole does not exist; but, when we call to our aid, as a measure of form for the plastic art, the proportions of the ancient Greeks and Romans, who attained the highest state of perfection in art, we shall find that they (for example, in the shafts of their pillars) took the proportion of their thickness, or of individual parts of them (such as the pedestal, capital, &c.), at most, in the proportion of as 1 to 10 or 12, and only in a few cases have admitted smaller parts; because the smaller proportions to the whole, when that is not again divided into principal parts, do not present an easy and clear view. Our numbers may serve for an example, if, to begin, we take the units from 1 to 10, and then, for the other parts, from twice 10 (20), three times 10 (30), &c.; or, take for the first class units, for the second tens, for the third hundreds, &c.

30. We cannot, indeed, perceive with our eyes any very small departure from quantity (*Größen*), as in the proportion of numbers to each other; but a practised eye very easily distinguishes in two objects a well-chosen proportion, if one size (*Größen*) is not too much contained in the other; particularly if several divisions direct the eye to the proportion of the whole: in pillars, for example, which are divided into the pedestal (*Fuss*), the shaft (*Stamm*), and the capital (*Capital*).

31. In Gothic architecture, in which the individual parts, such as the shafts of the pillars, are often of a height of as 1 to 50, 1 to 100, &c., the proportions of single parts are not perceptible; and in such buildings the tangible proportions are only to be found in the principal masses. They create in us, therefore, only astonishment, but not that agreeable sense of the beautiful which we feel in the Grecian and Roman architecture, when the individual parts, as well as the whole, are in perceptible proportion to each other.

In common life, we like to compare objects with the size of the human frame; because it is most familiar to us, and we usually like to believe all objects created for man. From this cause, it appears that the span, foot, ell, fathom, &c., have been adopted as measures in manufactures and trade.

ON SYMMETRY AND EURHYTHMY.

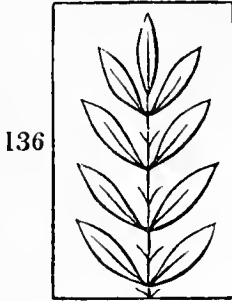
32. Symmetry and eurhythm, as the arrangement of form (*Formenordnung*), and agreement (*Wohlgereimtheit*) of several parts to each other, are two essential conditions of the beautiful, extracted from creative nature. So, for example, man, and even the leaf of a tree, however manifold its form may be, are symmetrical; and, in the case of the tree, however manifold the spread of its branches and the mass of its foliage may be on all sides, a eurhythm of parts is apparent; and this rich disposition

elevates the mind and heart, and, in the plastic art, may find a suitable application.

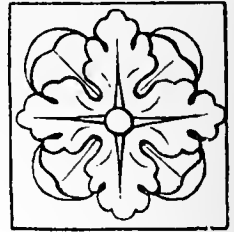
33. A symmetrical arrangement, such as the equiformity (*Gleichförmigkeit*) of single parts to each other, is required in the exterior and interior views of objects in a

- i. Vertical,
- ii. Inclined, and
- iii. Horizontal, direction.

34. For the preservation of symmetry in vertical or inclined surfaces, the objects standing one over the other, as in the leaves of a tree (*fig. 136.*), may be alternate and various, if the horizontal height of both sides opposed to each other be equal.

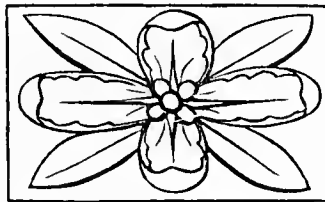


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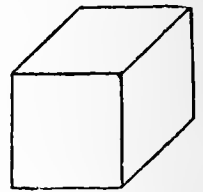


137

35. As a symmetrical representation for a surface, the form of plants or flowers may be used, as they appear to the eye contemplated from above. (*figs. 137. and 138.*) The individual parts, in this instance, either spread equally on all four sides, like *fig. 137.*; or equally towards the two opposite sides, like *fig. 138.*



138

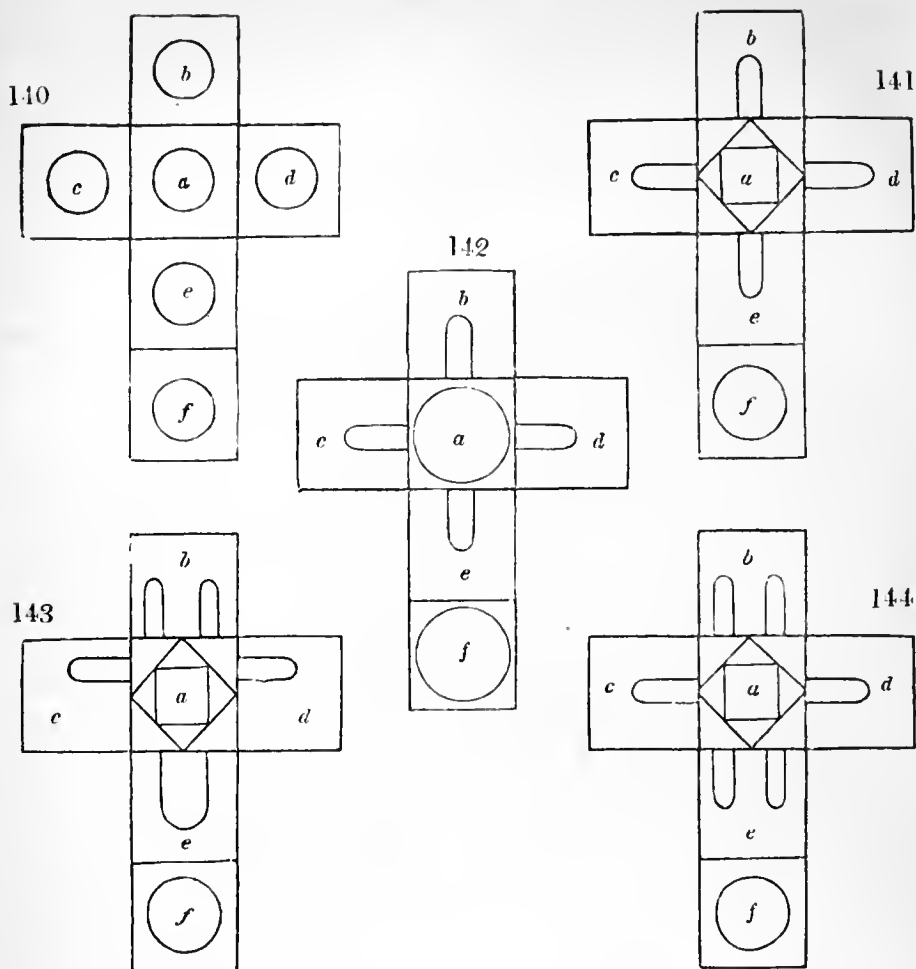


139

36. As a representation of an exterior or interior symmetrical body (*Körper Symmetrie*), a cube (*Würfel*) (*fig. 139.*), which is symmetrical, may be used for all forms, when

- i. All the six sides are of an equal form, as is seen in the series of surfaces of cubes, *fig. 140.*; *
- ii. When the surfaces of the floor below, and the ceiling above, are formed differently from those of the four perpendicular sides, as in *fig. 142.*; or,
- iii. When the surface of the floor is different from that of the ceiling, and those of the four corresponding sides (*fig. 141.*);
- iv. When the surfaces of the floor and ceiling are arranged according to a plan similar to the foregoing (*Angaben*), but so as to imitate the symmetry of the human figure; having two equal sides opposite each other, the third as the front, and the fourth as the back (*fig. 143.*); and, lastly,

* If the *figs.* from 140. to 144. are considered as each forming a series of faces of the cube *fig. 139.*; the square surface *a* may be the floor of a room; the surfaces *b, c, d,* and *e,* the side walls; and the surface *f* the ceiling (*Decke*); and the objects drawn on these surfaces the ornaments of doors, windows, ceilings, &c.



v. When the two sides opposite to each other are the same, and the third is made like the fourth. (*fig.* 144.)

In this, as in the foregoing case, the whole is strictly symmetrical, although one side may be unsymmetrical of itself, as the sides *c d*, in *fig.* 143.

37. *Eurhythm*y, or harmony, as the suitableness (*das Schickliche*) or agreement of individual parts among themselves, is requisite in every work of art; because, otherwise, the equilibrium (*Gleichgewicht*), or, rather, the suitableness (*das Schickliche*), is injured, and the eye is offended.

Thus, for example, unskilfully chosen materials, which on one hand display riches, on the other poverty; or a range of columns in a hall, placed too far apart; or a small picture on a wall, where it is out of proportion with the rest of the surface of the wall, and, perhaps, placed at the very end of it, offend. If the picture is in the middle, when in a symmetrical position, it divides the wall equally; or, if there are several small pictures on it, the disproportion of size no longer disturbs us, as they appear now in a better eurhythmical relation with the surface of the wall; from being several parts, or by indicating the middle.

Thus, for example, the leaf drawn on the rectangular surface, shown in *fig.* 136., or a similar drawing, does not fill the space eurhythmically, although the leaf is symmetrical in itself.

In like manner, a round rosette in a square ceiling is not eurhythmical with the form; because the round form is not parallel with the square, and, therefore, the two forms are heterogeneous to each other.

38. When these heterogeneous forms are so presented before the artist, that, as it often happens, he cannot avoid them, such as the square plinth (*Platte*), or abacus, on the round shaft* (*Säulenstamm*), and other similar objects, he must endeavour to unite these two forms in an ingenious manner, and so as to please the eye, that the eurhythmical harmony may be as much as possible restored, and the want of agreement (*Ungereimtheit*) obviated and concealed as much as possible.

39. According to these principles and views, which are all more or less requisite for a proper judgment of forms and the beautiful, I have given representations of the various ancient and modern drinking-vessels; and have added a selection of beautiful and classical antique urns, in order, by thus placing them together, to be able to estimate their æsthetical intrinsic value of form, in so far as it is suitable for a general model for judging of form in the compass of necessity (*Bedürfnissraum*), and which may be applied to the other requisites of art (*Kunstbedürfnisse*).

40. In order to represent forms for the inventing of objects, according to the manifold necessities which may occur, in the simplest manner, they may be entirely reduced, for the plastic art, to those coming within

a. The compass of necessity (*Raum des Erfordernisses*);

b. The compass or form of preservation (*Erhaltung*), in so far as it serves for the protection or strength of the object, and can receive the form,

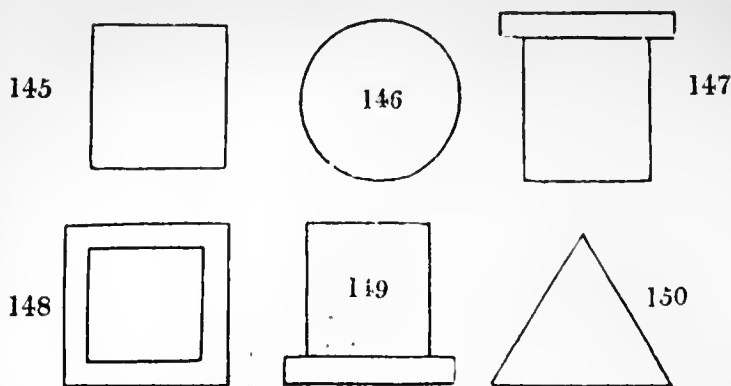
i. For the compass of necessity (*Bedürfnissraum*), as in *figs.* 145, 146., of square or circular enclosed roofs;

ii. For the form of protection, a cover (*Deckel*), or frame (*Rahmen*), as in *figs.* 147, 148.; or,

iii. For strength or solidity; for which purpose either a pyramidal form, or supporter (*Untersatz*), may be introduced for enlarging and strengthening the basis, as in *figs.* 149, 150.

41. From the pictorial representations here given, all possible forms for the many and various necessities of human life may be taken; and objects, on the whole, refer, —

* In the Ionic and Corinthian capitals, the transition from the heterogeneous form of the round shaft to the square plinth above, by cochleæ (*Schnecken*) and foliage, is rendered not striking, but very ingeniously concealed from the eye.



- a. To the preservation (*Erhaltung*);
- b. To the improvement (*Veredlung*); and,
- c. To the splendour or luxury of man.

A number of forms might be given in explanation of them; but, as the perfect and the beautiful, in all objects, may be referred to a common idea, and may be taken from one object, I have selected here, as a pictorial elucidation, the forms of our usual drinking-vessels from the immeasurable cycle of plastic art, and endeavoured to deduce their forms from their intended use.

As the compass of necessity (*Bedürfnisraum*) requires, for the most part, a greater extension of forms for the preservation, as well as for the protection and strength, of the productions of art, which cannot be shown in detail in these vessels, I shall say what is necessary on this subject after the explanation of the forms.

42. When we consider the forms of drinking-vessels with this intention, we must not forget that the liquor is either to be kept in them, or distributed from larger to smaller ones, or to be drunk out of them; and that, to be fit for use, and conformable to the end in view, the space (*Raum*), for the quantity and quality, must agree with the material of which the vessel consists, as well as with its use and purpose.

43. As a vessel of this kind, besides its suitableness, must also have a subjective worth, and, therefore, must be objectively perfect and beautiful; so, according to the above conditions, the beauty of the form is to be made in accordance with durability and fitness with respect to the destination.

44. For the proper form of the drinking-vessels here spoken of, we must take into consideration, —

- i. The quantity and quality of the liquor;
- ii. The material of which the vessels are to be made;
- iii. Their partial or constant use;
- iv. Their solidity or durability;
- v. Their convenience in use; and,
- vi. The beauty and agreeableness of their forms.

45. ad i. All liquors may be divided into, —

- a. Spirituous, such as wine, liqueurs, &c.;
- b. Weak watery liquids, such as beer, milk, water, &c.; and,
- c. Cold and warm liquids.

Ad ii. The material for the vessels may be of wood, stone, metal, leather, paper, glass, or burned earth, &c.

46. ad iii. When we consider drinking-vessels according to their use, there are, in reality, but three sorts; in which, —

- a. The fluid is preserved in large quantities, such as casks, large ancient stone jars, &c.; or,
- b. Small vessels, such as bottles, pitchers, &c.; into which a certain quantity is deposited for drinking; and,
- c. Drinking-vessels, such as cups, drinking-glasses, &c., for one or more persons.

47. ad iv. Although we can acquire a sufficient solidity for vessels by a mixture of various materials, or by a greater mass of them, yet it chiefly depends on art to make them in the most economical manner (*auf das sparsamste*), and yet suited to the purpose, of the most simple materials. We must therefore first take into consideration, —

- a. The natural properties of the material;
- b. A well-chosen form, analogous to the fluid, as well as to the material.

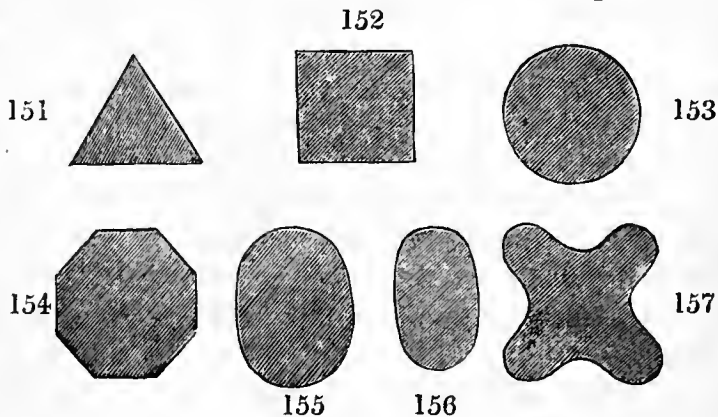
48. ad v. The vessels are called convenient, when

- a. The large vessels, such as casks, stone jars, &c., are easily filled and emptied, and in all respects adapted to preserve liquids;

- b. When the smaller vessels are equally adapted for preservation, carrying, and distributing; and when

- c. The drinking-vessels, such as glasses, cups, cans, &c., can be easily laid hold of, drunk out of, and set down, &c.

49. ad vi. Drinking-vessels may be, in their ground plans, 3- 4- 6- or many-cornered, round or oval (like those in *figs.* 151. to 157.); and, in their upper forms, may be straight, convex, con-



cave, or of composite forms. But, as beauty presupposes a not general use, and proceeds from a rich and manifold alternation of outlines in indivisible unity; and, as single mathematical

forms possess no beauty, but are to be considered as single words in oratory, and only acquire interest and importance when united with other lines and forms; so must composite forms correspond as much as possible, in every respect, with the above requisites and conditions.

50. If we take into consideration what has been said, which is more or less applicable to every vessel, it will appear that the form, in every respect, is suitable and beautiful, only when the object is capable of a beautiful form, and is not to be applied to a low and common purpose. According to this view, not only every destination of the liquid (as we have already mentioned) requires a particular form of vessel, but almost every liquor and every material; because wood is of a different nature from stone, glass, &c.; and, consequently, the constituent parts of each material demand a form analogous to them.

(*To be continued.*)

ART. III. *Experiments made for the Purpose of ascertaining and exhibiting the necessary Strength of Piers to be employed at the Angles of Buildings, carrying Arches over Doors and Windows.*
By WILLIAM BLAND.

EXPERIMENT 1. A semicircular arch of 10 in. span just balances on a pier measuring 2 in. by 4 in. for the base, and 7 in. high. See fig. 148. in Vol. III.

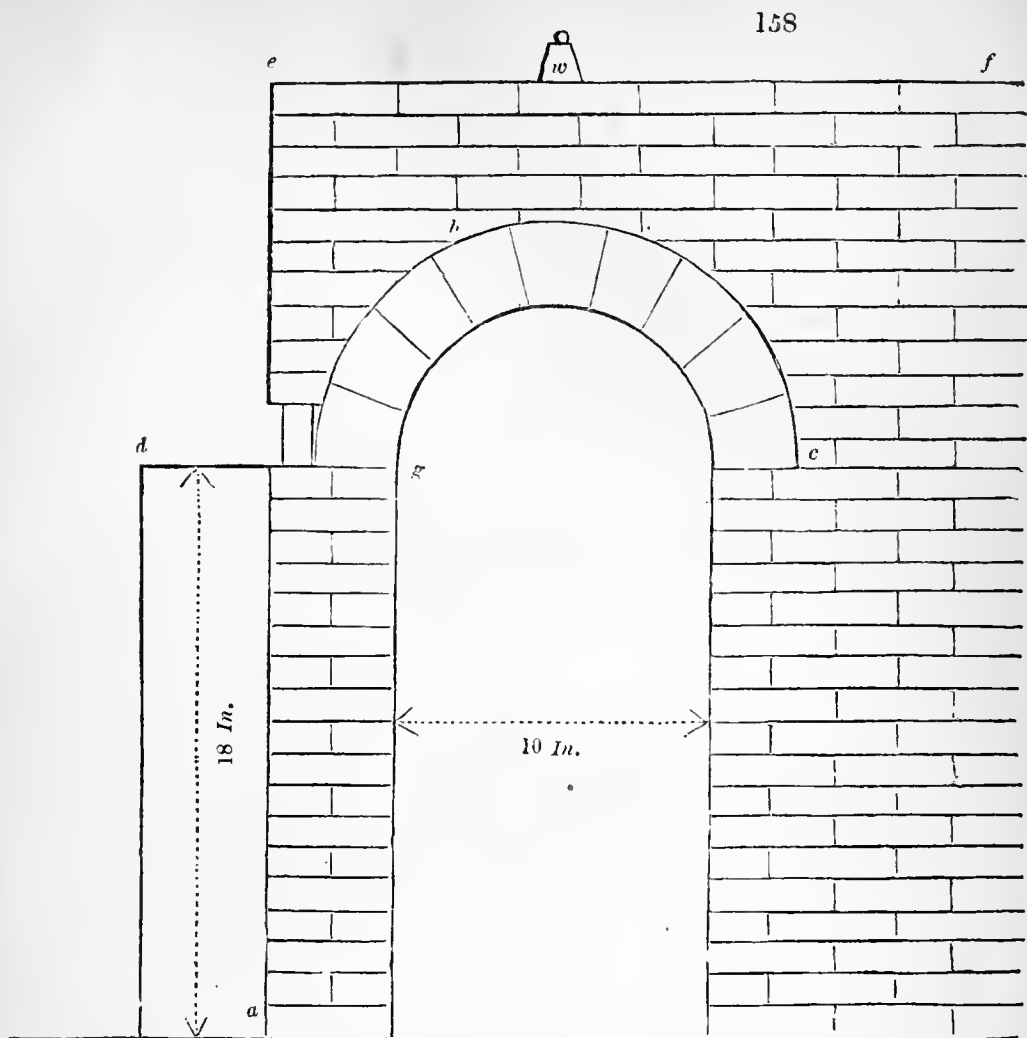
Exper. 2. The same arch, on a pier 4 in. by 4 in. base, and 7 in. high, balances with 5 lb. placed on the crown of the arch.

Exper. 3. The same arch, on a pier 2 in. by 4 in. base, as in experiment No. 1., and 7 in. high, having three courses of masonry above the crown of the arch, balances with 5 lb. placed on the masonry; thus proving that the strength of the pier in this third experiment is rendered equal to the pier in the second experiment, by the three courses of masonry above the arch.

Exper. 4. A semicircular arch of 10 in. span just balances on a pier measuring 4 in. by 4 in. base, and 18 in. high. See fig. 158. *a b c*.

Exper. 5. With the pier 9 in. by 4 in. base, and 18 in. high, as represented in the diagram fig. 158. by the letters *a d b c*, it balanced with 12 lb. on the crown of the arch.

Exper. 6. The pier 4 in. by 4 in. base, the same as in the fourth experiment, and 18 in. high, having four courses of masonry over the arch, as shown in the same diagram by the letters *a e f*, balances with 12 lb. placed on the masonry above the crown of the arch. Here, again, the pier *a b* is rendered equal in strength to the double pier *a d*, against the outward



thrust of the arch $g b c$, by the masonry $g e f c$, upon and above the arch.

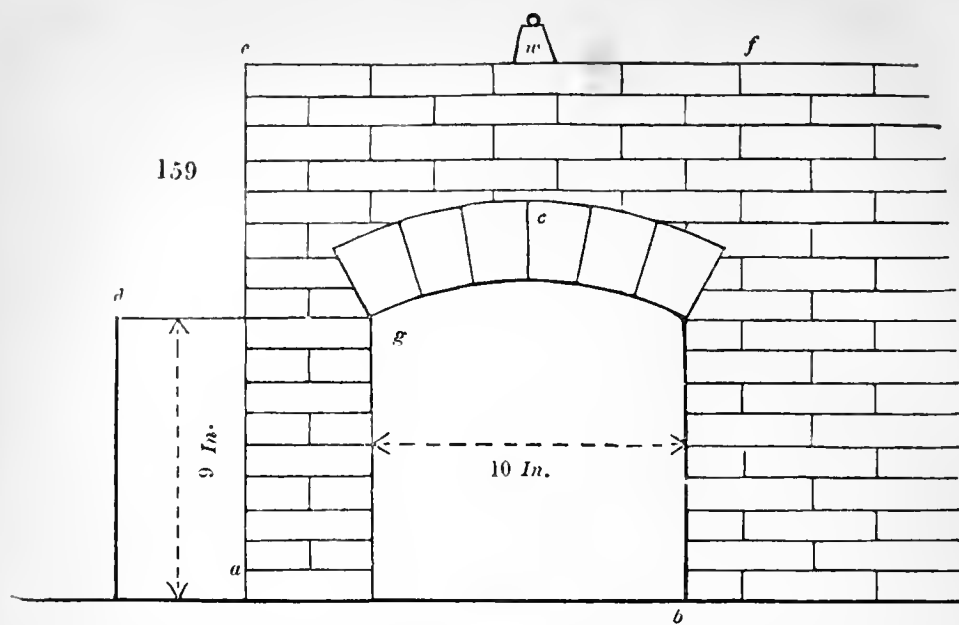
Exper. 7. An arch, the segment of a circle, of 12 in. radius, and 10 in. span, just balances on a pier having 4 in. by 4 in. for its base, and 9 in. high. See diagram *fig. 159. a b c*.

Exper. 8. The same arch as the preceding, placed on a pier having a base of 8 in. by 4 in., and 9 in. high, just balances with 6 lb. placed on the crown. See diagram *fig. 159. a d c b*.

Exper. 9. The segment arch, as before, and placed on a pier having 4 in. by 4 in. for its base, and 9 in. high, but with four courses of masonry over the crown of the arch, just balances with 6 lb. on the top. (See diagram *fig. 159. a e f b*.) These four courses of masonry, again, render the pier $a g$ of equal strength to the double pier $a d g$.

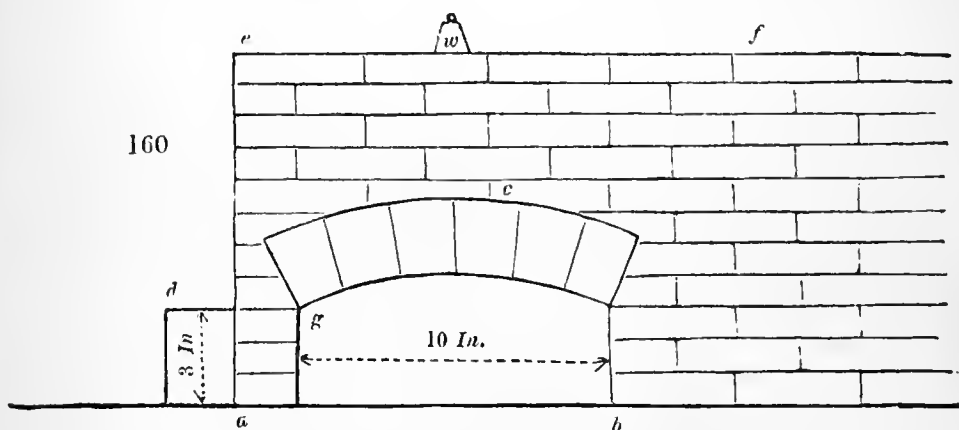
Exper. 10. The same segment of arch and span as the preceding just balances on a pier 2 in. by 4 in. for the base, and 3 in. high. See diagram *fig. 160. a c b*.

Exper. 11. The same as experiment 10., but with the base



of the pier 4 in. by 4 in., as shown in the diagram *fig. 160.*, by the letters *a d c b*. This arch just balances with 2 lb. on the top of the crown.

Exper. 12. The same arch and pier as experiment 10., and of the same height, but having four courses of masonry over the crown (see diagram *fig. 160. a c f b*); and just balances with 2 lb. on the top.



Exper. 13. The same segment arch, with a pier 2 in. by 4 in. for its base, but 18 in. high. This arch and pier would not stand even with eight courses of masonry over the crown; the pier being too slight, yielding out immediately, and letting down both arch and masonry.

Exper. 14. The same segment of arch, with the base of the pier 4 in. by 4 in., and 18 in. high; having, as in the preceding experiment, eight courses of masonry over the crown of the arch: but this would not stand, the pier yielding out as before, and letting down both the arch and the incumbent masonry.

Exper. 15. The same arch again, but with 8 in. by 4 in.

or the base of the pier, and 18 in. high. Thus constructed, the pier and arch balanced firmly with 3 lb. on the crown of the arch.

Exper. 16. The same construction as in experiment 15., but having eight courses of masonry above the crown of the arch. With this masonry so placed, the pier and arch stood without the least yielding under the weight of 12 lb. on the top. The reason of this strength proved, upon measurement, to be, that a straight line could be drawn from the weight to the outer base of the pier, quite within all the masonry.

Exper. 17. A pier, or rather wall, 2 in. thick by 16 in. long, and 3 in. high, having the segment arch, as in experiment 10., placed on the top, balanced rather more firmly than it did with that pier; thus proving a portion of strength, though small, to be gained by placing an arch upon a wall where a pier of greater depth cannot be constructed. See similar results, as given in figs. 67. and 68. in Vol. III.

The diagrams to which these experiments are referred are on the before-employed scale of the eighth of an inch to an inch; and of the bricks, eight weigh a pound.

ART. IV. *Hints on Construction: addressed to Architectural Students.*
By GEORGE GODWIN, JUN., F.S.A. and M.I.A.

NO. 4. BRICKS AND BRICKWORK.

A STUDENT, at this time, has no excuse for an ignorance of the leading principles of any of the sciences. Fifty years ago, a man who hoped to attain the extent of knowledge here implied must have toiled earnestly and unceasingly, wading through the theories and contradictions of centuries, with which truth was overlapped; and gaining thence, if he were sufficiently persevering, some few of its illuminating rays to guide him in his enquiries. It was not to be hoped, then, that individuals, who had specific occupations to employ them, could do more than acquire such information as was actually necessary for the practice of their trade or profession. But now, when men are at the corner of every street, if we may so speak, waiting to deliver verbally, in an hour, the results of the investigations of others during years, to be received by hundreds at the same time, passively, without trouble; when powerful minds are engaged on all sides applying the hydraulic press to accumulated bales of knowledge (arranging, simplifying, condensing), and spreading the proceeds abroad, in all shapes and in every direction; to acquire this general notion of all the sciences is not the labour of a life, but the recreation of leisure hours. To possess this knowledge is, therefore, no longer a distinction, but to be without it is a disgrace.

We do not say, stop here: indeed, you *cannot*, if you desire to maintain your position in society, and pursue your profession successfully and honourably; and *would* not, even were you able; for the pursuit is of itself so alluring, and the gain so certain and so glorious, that, enter once upon the chase, and there will be no need of other inducement to continue it. Our only care is, therefore, that you should early feel the importance of general science, and disregard no opportunities for the attainment of it.

That it is important, who will doubt? The architect is called upon to deal with matter in every shape: surely, he should be acquainted with its properties, and the laws by which it is regulated? In other words, he should be conversant with physics. The decomposition of the materials employed in carrying out his designs would frustrate all his hopes. He must know of what they consist, and the mutual affinities of the elements composing each, if he would, in the first place, choose wisely, or, having chosen, apply a preventive or a remedy for an arising evil. This acquaintance he cannot possibly attain without some knowledge of chemistry, any more than he could economically ventilate or warm an edifice, without comprehending the nature of caloric; or construct a building, to answer some desired acoustical purpose, without understanding the science of sound. Anything more, however, on this head might, perhaps, be deemed supererogatory; nor, indeed, should we have ventured, in this place, even on the preceding remarks, had we not been led to them by reflecting on the numerous ways in which scientific knowledge may be advantageously brought to bear, as it may be in all other branches of construction, on the fabrication of bricks and the erection of brick buildings; and on the degree of scientific knowledge which a man must possess, who would explain satisfactorily every phenomenon to be observed in these respects, suggest with certainty remedies for known defects, and predicate increased excellence from the employment of new modes.

A brick, we know, consists chiefly of pure clay and flint in the shape of sand, mixed with water; in other words, of alumina and silica, the latter the basis of glass; each of them an oxide of a metal (or compound of a metal and oxygen); the former consisting, as we learn, of ten parts of aluminum (the metal) and eight of oxygen, the latter of eight of silicium and eight of oxygen. When the two, constituting ordinary brick earth, are mixed together with water, they form a tough, tenacious, and plastic mass; but if it be heated, if the water by which the admixture was effected be driven off, it loses its plasticity, never to be again acquired, and becomes a solid substance, a silicate of alumina, strong and endurable in proportion as the admixture of the two components is complete, and the burning sufficient.

To show the value of properly kneading the earth, and bringing its particles into close connexion, it may be sufficient to say, that, by the bestowal of additional labour in this respect, bricks may be made, capable of resisting twice the amount of pressure which would destroy others prepared less carefully, of similar earth. As regards the effect of perfect burning, and entirely driving off the water, it is but necessary to examine a brick clamp when opened, and note the difference observable between the bricks where the fire has exerted its due influence, and those where it has not done so, in order to comprehend its importance. Where both these points have been attended to, the brick is usually of a bright clear colour; has a metallic sound when struck; and, if it be broken, does not crumble to powder, but presents a sharp ragged fracture. Those bricks which have not received the full action of the fire will not fulfil these conditions, and form what are called *place-bricks*: they will not resist the weather for any length of time; are crushed by a trifling superincumbent weight, and, consequently, should never be used where durability is regarded. The terms *place-bricks* and *stock-bricks* are merely disguises; they are but other words for *bad* bricks and *better* bricks: and one might reasonably suppose that no person would knowingly use bad materials, to effect a trifling temporary saving, when better might be obtained; and, therefore, that *place-bricks* would never be used: unfortunately, however, the reverse is too frequently the case.

If the clay contains too great a proportion of alumina, the bricks contract greatly by burning, and are liable to crack in the operation; and, if of silica, the bricks will be very brittle. In theory, we may say that bricks which are found to be less than those of ordinary size are, other things being equal, of imperfect composition. For practical purposes, this may, or may not, be worthy of notice; but there is a real evil attending the use of small bricks, which certainly should be mentioned; namely, that as, in a given amount of work constructed with them, there will necessarily be a greater number of mortar joints than in the same quantity of walling for which large bricks are employed, it will settle down more, and be, at all events for a time, less stable than in the other case. The heavier a brick is when dry (and this, in a great degree, is regulated by the amount of labour bestowed on the kneading of the materials), the better it is, the more solid, the more impervious to water.

Silica and alumina, when mixed, do not melt on being exposed to the action of heat, unless there are other substances present, such as lime, for example, in which case fusion is easily effected, and a vitrified mass results. The glazing sometimes given to the surface of bricks, for various purposes, depends on the vitrifiability of silica when mixed with certain substances.

The ordinary mode adopted is, to throw upon the bricks, when heated, common salt, which we may term a muriate of soda: this is decomposed, and the soda, uniting with the clay, induces fusion of the surface. Glass, we know, is nothing more than silica and soda fused by heat; therefore, in fact, by this operation the bricks are *glassed* over.

After what we have said, it is hardly necessary to remark that bricks made of sand and clay, containing any portion of lime or other flux, may not safely be used in situations exposed to violent heat, inasmuch as they would readily fuse. Fire-bricks specially so termed consist, for the most part, of pure clay, mixed with a certain quantity of old fire-bricks or other burnt clay reduced to powder, which fulfils the office of sand, but is less liable to fuse if accidentally brought into contact with ordinary fluxes.

The colour of bricks, although so various as it is, depends chiefly on the oxide of iron, which all native clay contains; the effect being modified by the substances with which it is combined, or circumstances of which we are ignorant. It is the same with the natural gems, or jewels (many of which consist, too, of the like materials as brick, namely, silica and alumina); for these, although for the most part quite different from each other, owe their colour to the presence of oxide of iron; as, for example, the lazulite, which is blue; and the obsidian, which is black; the yellow topaz, and the red garnet.

Concerning the processes of brick-making, although by no means beneath the attention of the architect, we shall say nothing other than to advise the student to inspect them for himself, in some of the numerous brick-fields to be found in the immediate neighbourhood; nor shall we here enter upon the history of bricks, which should probably commence at a time when the first man, Adam, was alive, and would include mention of nearly every known country in the world. England is especially dependent on brick as a building material; and there are numerous excellent examples remaining of brickwork executed many years ago, to show how well it may be performed. We may notice several houses in Lincoln's Inn Fields, and No. 43. in St. Martin's Lane, which display, as indeed do many others even in a greater degree, ornamented pilasters and entablatures formed in the same material with great nicety. At this time, however, in consequence, among other things, of inattention on the part of architects, the system of competition pursued, and the general use of cement as an exterior facing (which naturally induces the men to do their work carelessly, knowing it will be covered, and engenders bad habits), good brickwork is seen but seldom; and it would now, perhaps, be a matter of difficulty, to find a dozen workmen in London capable at once of imitating some

existing specimens. We say at once, because we are perfectly satisfied that there could not be a demand for any amount or sort of skill which England could not supply; and that, if such work were required, and were properly paid for, men would speedily arise equal to the task. We propose to consider some of the various modes of executing common brickwork, and afterwards describe certain supposed improvements in the form and use of brick.

ART. V. *Notes on Modern Architecture.* By AMICUS.

No. 5.

IF greatness of dimensions constitutes beauty of form, the entrance to the Birmingham Railway, in Euston Square, possesses this quality. When we stand at the foot of one of the columns, there appears a certain degree of vastness, which astonishes and overawes us: but, seen from a distance, this is not the case, for the whole effect is then poor and meagre. A mere screen of columns, without much depth, is almost sure to produce a poor effect, for the want of a background, which a building of greater depth gives. This building may be called a screen of double Doric columns in antis, surmounted with a triglyphed entablature and pediment. On each side are two plain square buildings (offices, I suppose), with coupled pilasters at the angles; and between these buildings are elaborately ornamented gates. On the apex of the pediment of the centre is an acroterium; and the cymatia of the sides are ornamented with lions' heads, surmounted with antefixia. The roof is covered with stone, in imitation of the Greek temples: the columns are about 50 ft. high. Such is the colossean entrance to the Birmingham Railway. The stone of which it is erected is Yorkshire Bramley Fall. In turning over the Fourth Volume of your Magazine, in p. 439., I find it stated by your correspondent Eder, that "advertisements were put forth in the daily papers for a [design for a] building connected with a railway; but, after five weeks had elapsed, circulars were sent to the competing architects, to say they need trouble themselves no farther, as it had been resolved to give the work to Mr. Hardwick." I presume the Birmingham Railway is here alluded to. This gross injustice and insult requires no comment: it is on a par with the usual deliberations of committees who have to judge of architecture. But let us now see what great wonder has been produced, which induced the committee at once to adopt the design, without competition. Is there any great effort of genius? is there grand and novel conception, combined with fitness, to recommend this single design, without taking the advantage of

a variety to select from? If this had been the case, there would be less reason for complaint: but what is the result of this sapient decision? Look, ye aspiring architects, look at the great work which an enlightened committee conceived could not be surpassed in dignity, grandeur, or originality, although a chance had been given for talent yet unheard of! But talent they did not ask for; they only required a building connected with a railway. The veriest tyro could have produced the same design which now rears its mighty head above the surrounding bricks and mortar. The committee asked for a design; and in comes the architect, with columns 50 ft. high. "Ah!" say the committee, "magnificent idea! Columns 50 ft. high! there is nothing of the kind in London! Talk not to us of fine conception, original genius, harmonious grouping, fitness of purpose, or any such stuff: we shall surpass every thing." And at once are all complaints settled by the gigantic columns. But, good gentlemen, we appeal to you as intellectual beings, as persons qualified to judge of the merits of the case: is this building every thing you can wish? is it every thing that can be wished for by architects? is it the *ne plus ultra* of design? I think I hear you say, "Not exactly." First, the cost is enormous for a mere screen: secondly, the colonnade, and the offices immediately behind it, are of such mean design and material, that it appears as if a paltry economy had just stepped past the lavish expenditure, when too late, to retrieve a broken fortune by retrenchment: and, thirdly, there is very little fitness in the design; for, if any contrivance of modern engineering should supersede railways, the mere alteration of the name will be quite enough to make this entrance applicable to any other purpose. Of such universal application is it, that it is scarcely within the range of possibility to mention the number of purposes to which it could be applied as an entrance. With ample scope, with ample funds, and no restriction, and with excellent material, we should have expected something better than the mere commonplace portico, which we can see in almost every street. What is architecture? or, rather, what will architecture come to, if our greatest public works are only to astonish us by the amount of their cost? I know that this building has its admirers: but who are they, and what do they admire in it? Generally, people passing near look up with amazement, and feel a certain degree of pleasure at its size. I myself was struck with its colossal dimensions when I stood in one of the flutes of the columns. But would it not be equally possible to produce these sensations by an original design? or are we at such a low ebb of mental enjoyment, that we can only feel gratified by the imitation of known forms? and have we not yet arrived at a sufficiently high pitch of civilisation to be able to appreciate works of originality? He who

first steps out of the beaten path soon repents his indiscretion ; for his works are to be judged by a committee who have but limited ideas on the subject, and whose knowledge is confined to what they are constantly in the habit of seeing. Show them temples which have been admired for ages in Athens, and say you will reproduce them here, and you are immediately in favour ; but the poor idiot who presumes to bring forward a work of originality, one which has cost him great pains and labour in producing, though full of genius of every quality, is not looked at, nor heard of: we ask in vain who he is; he shrinks back, and, if he must live, he must produce works that can be seen and understood by those who have the power without the knowledge.

London, June, 1838.

REVIEWS.

ART. I. *A Dictionary of the Architecture and Archæology of the Middle Ages ; including Words used by ancient and modern Authors in treating of Architectural and other Antiquities ; with Etymology, Definition, Description, and Historical Elucidation : also, Biographical Notices of ancient Architects.* By John Britton, F.S.A., Author of the "Architectural and the Cathedral Antiquities of England," and of other Publications. Illustrated by numerous Engravings by J. Le Keux. 8vo. Part IV. and last, p. 177. to 498., six 8vo copperplates and two woodcuts. London, 1838.

IN our second volume, p. 546., we characterised Part III. of this work as of first-rate excellence, and expressed a hope that it would soon be completed. We have now great pleasure in making known to our readers that this is the case; for in no other architectural dictionary will they find information so complete and so correct. The work has been one of immense care and labour; but it is evidently a favourite one with the author; and he has, in consequence, been unsparing of expense. That which gives great value to every separate article in this dictionary is, that, after every explanation of a term (with very few exceptions), the authority from which the explanation is drawn is given, as in Johnson's *Dictionary*. We give, as an example of this, the article Cupboard, at which the volume happens at this moment to open, because it will show that the *Dictionary* is not only a work for architects and antiquaries, but for general readers:—

"CUPBOARD; a board, or shelf, to place cups on. The cupboard formerly supplied the place of the modern side-board; being, in some instances, a single shelf fixed against a wall, and, in others, framed in stages, rising one above another, so as to admit of an ostentatious display of plate. It was generally covered with carpets. In old records are many notices of the

valuable articles placed on cupboards ; and from Lord Fairfax's 'Orders for the service of his household,' it appears that there was a servant called the cupboard-keeper, whose duty it was to supply the guests with wine. Some cupboards of plate were called court-cupboards ; and the livery cupboard is supposed to have been that on which the liveries, or evening collations, were divided, preparatory to their being sent to the chambers. See *Nares's Glossary* ; *Hunt's Exemplars*, p. 122. ; and note to p. 108. of the *Northumberland Household Book*."

In the preface, the author observes that, —

"When he commenced the *Architectural Antiquities*, in 1804, he experienced no small difficulty in obtaining something like a grammar and dictionary of that architecture which he had undertaken to illustrate and describe. The Essays by Warton, Bentham, Grose, and Milner had been collected and published in a small volume, by the late Mr. Taylor of the "Architectural Library," in Holborn, London ; but his volume did not attract much publicity at first. The science of architectural antiquities was in its infancy, and, like human infancy, was uninformed, eccentric, and undisciplined. It is a generally admitted fact, that the *Beauties of England and Wales*, and the *Architectural Antiquities*, which grew out of the former, created a new era, produced a new taste and partiality for the architecture of the middle ages. Once awakened, the new spirit became active and full of curiosity ; and, as antiquarian subjects, in different parts of Europe, were numerous and interesting, they commanded admiration, and induced authors and artists to publish illustrations of their histories and characteristics. Within the last thirty years, more has been written on architectural antiquities than had ever before been produced. The result is an improved and enlarged appreciation of their manifold merits and intrinsic capabilities ; a more intimate acquaintance with the art, the sciences, and the customs of bygone times ; a correction of many errors and prejudices, and a disposition to apply some of the principles of mediæval architecture to modern erections.

"From architectural and archæological glossaries and dictionaries the author has not derived much essential aid. He has, however, sought information from all that has been published in that form, as well as from many other volumes and essays which have appeared in the English and in foreign languages. The works hereafter enumerated will serve to verify this assertion : but many other authorities have been consulted ; and it is hoped that the numerous references made in the following pages will be a guarantee for fidelity and zeal." (*Pref.* p. x.)

After remarking on all the different architectural dictionaries and glossaries, and dictionaries of architecture and antiquities, the author concludes by thanking his numerous friends and coadjutors, who have contributed *con amore* to improve the volume by useful suggestions and corrections.

The work is dedicated to the Queen, and commences by the following rather striking sentence: — "Sanctioned by your Majesty's royal command, I, a sexagenarian, dedicate this volume, on architectural antiquities, to the most youthful female sovereign that ever occupied the throne of great Britain."

In conclusion, we have only to state that Britton's *Architectural Dictionary* will henceforth be considered essential to every library, whether general or architectural.

ART. II. *A Practical Treatise on Railroads, and Interior Communication in general; containing numerous Experiments on the Powers of the improved Locomotive Engine; and Tables of the comparative Cost of Conveyance on Canals, Railways, and Turnpike Roads.* Third Edition, with Additions, illustrated by several new Engravings. By Nicholas Wood, Colliery Viewer, Member of the Institution of Civil Engineers, &c. 8vo, pp. 760. London, 1838.

THE first edition of this work appeared in 1825, and was favourably received; the second, which appeared in February, 1831, was still more so. This third edition contains, in addition to the experience of the last seven years, obtained on the Liverpool and Manchester Railway, and those for the conveyance of minerals and heavy goods in the north of England, all the information displayed in the formation of the London and Birmingham, Grand Junction, Newcastle and Carlisle, and London and Southampton, Railways.

“With the exception of some of the railways in Scotland, all those lines have been constructed on the same principle, and of the same width, as that of the Liverpool and Manchester railway. In forming a line of communication, however, between London and Bristol, Mr. Brunel has constructed a railway, of an increased width between the rails, and upon a principle essentially different from that of these other railways, a portion of which has recently been opened to the public.

“An historical and descriptive account of all the improvements made in the progress of these great works, not only in the construction of the railways, but in the motive power, and all the machinery used upon them, constitutes, therefore, part of the additional matter presented to the public in this edition. Numerous additional experiments, made to elucidate the powers of railways as a system of communication, are given in this edition, resulting from the increased opportunities afforded by the different railways now in operation.

“In this edition, also, we have availed ourselves of the very valuable information given by M. Pambour in his work on the locomotive engine, which contains a complete elucidation of the powers of that machine, and whose experiments are of the utmost importance in exhibiting the capabilities of the improved engines. Professor Barlow's experiments and calculations on the strength of rails have also contributed largely to our stock of information, which has enabled us to enter more into detail upon this part of the subject, than in the last edition.

“Considering, from the experience of the Liverpool and Manchester Railway, that we had sufficient materials to justify us in entering into calculations of the expense of working railways, we have, in this edition, gone into estimates of the cost of all the different charges of railway conveyance, for both goods and passengers; and have given tables of the expenses, under various heads of charge, at different rates of travelling. We have also gone into the expense of conveying by turnpike roads and canals, which we have compared with the cost of conveyance by railways, at the several rates of speed usually accomplished in the conveyance of heavy and light goods and passengers on these different systems of internal transport.

“These additions have necessarily increased the size of the work considerably; but we trust the additional information will be a sufficient justification, and that, though not so complete as we could have wished, compiled as it has been at casual intervals, snatched from professional avocations, the work will be found generally useful on so important a subject as that of railway communication.”

ART. III. *Perspective Simplified; or, the Principles of the Art, as laid down by Dr. Brook Taylor, familiarly illustrated.* By Z. Lawrence. 8vo, pp. 47, Nine folding Plates. London, 1838.

THE superiority of Dr. Brook Taylor's treatise on perspective to all others has, Mr. Lawrence observes, been universally admitted. Most subsequent authors have deemed it their highest ambition to illustrate the principles which he introduced; and so repeated have been the works for that purpose, that some apology seems necessary for adding to their number; the more especially, as many of them are as complete as can well be imagined. "It is, however, to this very circumstance that may, perhaps, be traced the fact of their being so little read. The principles themselves are simple and few; but, when their full application to practice is attempted, the field for explanation becomes so wide and tempting, that few writers can confine it to less than a volume of a bulk that deters the general reader." After enumerating the different authors who have written on perspective from the time of Dr. Brook Taylor, Mr. Lawrence observes:—

"After so much earnest instruction, when there is confessedly no advance to be looked for, nor even desired, in the science itself, more novelty in the way of illustration is as little to be expected, and as little required. The main improvement that suggested itself to me, as still untried, was concentration; to concentrate the subject into a few of the most essential theorems and problems, applying them to plain examples, illustrated in the most familiar manner. To this end, I have adopted for the representations objects of the most simple construction, having resisted all temptation to variety for the mere sake of embellishing the work with attractive plates, although I trust that those inserted will not be found deficient in interest." (p. iii.)

The letterpress is comprised in thirty-seven pages, and the greater bulk of the volume consists of plates. The first two of these are cut, and joined together in such a manner as to admit of their being raised and employed as models; so that by their means the first principles, or, at all events, what perspective is, may be rendered palpable to the most obtuse intellect. The work, we have no doubt, will be found extremely useful, not only in schools, but for self-taught artists.

ART. IV. *Transactions of the Society of Arts, Manufactures, and Commerce.* Vol. LI. Part II. 8vo, pp. 175. London, 1838.

THIS half volume contains an article on "Building an Obelisk without Scaffolding," of considerable interest to the architect. The mode was invented by Mr. T. Slacks of Langholme, mason, who built, according to this mode, an obelisk upwards of 100 ft. high, in honour of General Malcombe, on the summit of Whitaw, a mountain overlooking the town of Langholme. Work-

ing drawings of the machinery which he used are in the possession of the Society of Arts ; and the article is illustrated by one copperplate and three woodcuts. We shall probably give some further details respecting it in an early Number.

An article on limestone and calcareous cements, by the secretary, is a most valuable paper, and, of itself, ought to recommend this part of the Society's *Transactions* to every architect.

ART. V. *Portraits of British Forest Trees, with and without their Foliage ; together with Instructions for drawing Trees from Nature, and Rules for obtaining the Height, Width, and true Proportion that each Part bears towards another, clearly explained and exemplified.* Drawn from Nature, and on Stone, by Geo. R. Lewis, Author of a " Series of Etchings portraying the Physiognomy, Manners, and Character of the People of France and Germany ; Principal Muscles of the Human Body ; and an Address on the Subject of Education as connected with Design," &c. In folio Numbers, each containing six Drawings. London and Hereford, 1838. Price 20s.

THE author of this work is well known as an artist ; and, in the drawing of trees, he may be considered as ranking next to Strutt. He was selected by His Grace the Duke of Northumberland to make drawings of all the fine specimens of trees in the grounds at Syon ; and from these drawings (through the kindness of His Grace) were made upwards of a hundred engravings for our *Arboretum Britannicum*. Mr. Lewis also made various other drawings for that work in the Horticultural Society's Gardens ; at Kenwood ; Forty Hill, Enfield ; Moccas Court ; Foxley, the seat of the late celebrated Sir Uvedale Price ; Tiberton, Madeley, and various other places in the neighbourhood of Hereford. We mention these things to show that Mr. Lewis has not begun to draw and publish trees as a novice, but as an artist of experience in this department. We shall now let Mr. Lewis speak for himself.

" I have commenced this work with the Sire of the Forest, the Oak. The specimens selected are those in the lawns of Tiberton Court (the seat of the Rev. Henry Lee Warner), whose majestic and perfect forms are so well known, for variety in the numerous curves that their numerous ramifications are projected into, their perpendicularity of stem, and the great quantity of timber that each contains ; all of which qualities, contributing to the perfection of their general form, convinced me they would afford that information the public would gladly receive.

" I felt confident that justice could not be done to the grandeur and sublimity of these extraordinary trees, unless they were seen in their wood, as well as in their foliage ; for, when we take their skeleton state, and follow the upright line from their ponderous base to their great height, with so much of a perpendicular width, our surprise and admiration of a work so stupendous must be raised to the greatest extent. Possessing this wonderful piece of

framework, we can then compare it with its clothed and perfect state, which will afford us much information, and prove that there is as great a difference in the appearance of each tree in its wood, as there is in the same when in leaf." (p. 3.)

We shall have more to say on this work when we see Part II.

ART. VI. *An Historical Essay on Architecture.* By the late Thomas Hope. Illustrated from drawings made by him in Italy and Germany. Royal 8vo, 2d edition. London, 1835.

(Continued from p. 320.)

CHAP. XXXIII. *The Question of the Person by whom, or the Place where, the pointed Arch was invented, not to be solved, and of no Importance to the general Question of the Invention of the pointed Style.*

"Long after the decline of this new style, which, in its origin, excited an enthusiasm so universal, that, on its first appearance, every new building erected throughout the range of the Latin church was made to exhibit all its characteristics; and that even most of the old ones, finished in the Lombard, or rounded, method, were, as far as feasible, altered to it; when it not only had expired, but even the very tradition respecting its origin was become obliterated, men began to wonder whence, where, at what time, and among whom, such a great change had originated; what were the causes, what the foundations, what the rudiments, who the authors and parents, of this universal pointing of Christian architecture.

"Of these, many, only viewing its peculiar distinctive marks with a superficial glance; only struck with its singularity of external appearance, and overlooking that of internal principle, which was the prior cause and foundation of the other, seem to have been intent on the mere investigation of one single of the many internal features of that style, namely, the pointed arch, in a manner insulated and exclusive, and out of that connexion which this maintained with all the other equally essential characteristics, entirely changed from those of every other preceding architecture.

"But the mere question, 'Who invented the pointed arch?' taken thus separately, and out of its combination with the other modifications of the pointed style, is in itself a subject of no more interest than would be the ascertaining of the person who first invented the horseshoe, or trefoil, or quatrefoil, or cinquefoil, or elliptic, depressed, or any other peculiarly shaped arch, equally, in process of time, adopted in the pointed style; since, after the general abstract principle of the arch had been once introduced and brought into practice, the pointed modification of it might be formed out of the *disjecta membra* of the round, without the least new stretch of genius or invention, worth consideration; and might thence, in many different situations, from mere local circumstances of expediency, or whim, or even accident, be applied separately, and without any communication between the authors of the one and the other, so as to entitle each of these authors alike to such merit as the invention might deserve. This seems, in fact, to have been the case; since we find that in churches, in other respects round-headed, some arches, which were necessarily compressed, were pointed. Witness, at Paris, St. Germain des Prés, whose nave and choir were finished before the death of the Abbot Morand, their founder, in 1014, and whose choir, being the first part wanted, was doubtless, as in other churches, the first finished; the round east end is composed of five narrow pointed arches. The crypt of St. Denis, supposed by some to be of the time of Charlemagne, and at any

rate preceding the era of the regular pointed architecture, contains arches compressed in their latitude, and pointed at their summit.

“Nor would the mere question of when or how the mere pointed arch was invented, even if solved, avail us in ascertaining where or how originated the pointed style ; since the fundamental characteristics of that style are independent of, lie deeper than, that arch ; and its employment is not the cause, but only the consequence, of these ; since, as we have already shown, in many countries and in many ages, and long prior to the creation of the pointed style, in buildings not only of the earlier Lombard, but still earlier Byzantine, nay, still more primitive antique Roman style, the pointed arch had already appeared as an insulated feature, so situated, so intermixed with its round neighbours, that there could not be the least pretence for not considering it as coeval with these. Yet, during the whole intervening lapse of time, we cannot discover the least approach to the really essential characteristics of that style, or even this particular feature considered in any other light than as an accident, or an expedient seldom employed, and still more seldom made conspicuous, but rather confined to remote or obscure recesses.”

After enumerating a number of buildings in different parts of Europe, in Asia, and in Africa, where pointed arches may be found, the author thus concludes : —

“In every ancient Mohammedan city throughout Europe, Asia, and Africa, similar remains may be found in great numbers, dating from their first foundation : and even among the relics of pagan Rome, those of temples and baths, with polygonic cupolas or groined vaults, in fact, present this feature, not to speak of those Byzantine mosaics of the earliest period, which, representing pointed arches, proved the reality to have existed ; or of those dyptics of the earlier part of the middle ages, preserved among the Christian antiquities of the Vatican Museum, which show both pointed and scolloped arches, or of a silver *thuribulum* or censer, seeming of the eighth or ninth century, in the same collection, which represents both trefoil and horseshoe arches.

“Indeed, from the early, the widely diffused, and yet unconnected appearance of the mere pointed arch, and at the same time the evident contempt in which it was held, as a thing which might be admissible, as an expedient, and in places of little consequence, but should be avoided where there was room for others ; until that much later period when the peculiar properties of the pointed style caused it to be considered as an adjunct preferable to all others, the question of its origin would be as difficult to solve, as it is unimportant.”

(*To be continued.*)

MISCELLANEOUS INTELLIGENCE.

ART. I. *Domestic Notices.*

ENGLAND.

KYAN'S Patent. — Sir Robert Price, in withdrawing the motion of which he had given notice, with respect to the adoption of the use of Kyan's patent in the naval yards of this country, expressed a wish to know whether the invention had been subjected to experiment under the direction of the Admiralty. It was well known that it was now in use in the Dutch navy. — Mr. Brotherton hoped the secretary to the Admiralty would well consider before he gave a decided answer to the question, inasmuch as that a patent was about to be taken out [by Mr. Margary] for another invention, of which the

preserving qualities were infinitely greater than the invention of Mr. Kyan. [Sulphate of copper.]—Mr. Charles Wood replied that the invention had been applied in the naval yards, under the direction of Mr. Kyan himself; but nothing had occurred, in the course of the experiments, which would enable him to give a definite answer as to the probability of its general adoption in the navy." (*Morn. Chron.*, Aug. 7. 1838.)

Mr. Walter of Philadelphia, architect, arrived in London about the end of July, and has since set off for Italy. Mr. Walter brought with him a number of plans, elevations, and views of buildings which he has designed and erected, or which are now in the course of execution. Among these, the chief are, a large perspective view of Gerard's College, Philadelphia; and the elevations of the Philadelphia Workhouse, of a town hall, and of several private buildings. We shall give a history of Gerard's College, and a copy of the engraving, in our next Number; and, in the mean time, we would wish to direct attention to the excellent point of practice adopted by the town council of Philadelphia; viz., that they allow no public building to be erected, however small or apparently insignificant it may be, without the design having been previously submitted to and approved by some regular architect. In consequence of this regulation, there are less architectural deformities in Philadelphia than in any other city in the Union. It may be considered as a fortunate circumstance, in an architectural point of view, that Gerard belonged to Philadelphia, for the improvement and benefit of which he left nearly the whole of his immense fortune.—*Cond.*

M. de Châteauneuf, architect, of Hamburg, whose design for an exchange is mentioned in p. 320., has been in London for some weeks past, examining our public buildings and suburban villas and gardens, and superintending the publication of a selection of his designs. These will be published by Ackermann, in one volume, imperial 4to, in the course of the autumn.—*Cond.*

Dr. Zanth, a learned architect and author, from Stuttgard, is now in England, commissioned by the king of Wirtemberg to examine the modes of constructing hot-houses, and heating them with hot water.—*Cond.*

IRELAND.

A Moravian Burial-Ground at Ballymena.—"At the back of the church is the graveyard, a level of stainless velvet verdure spotted with shade. The stones are all flat, and alike. They lie in long rows, bedded in the grass, with roses sometimes waving in wild clusters over the stone. The men and women occupy different sides of the principal aisle; and the rows are regulated again according to age, marriage, and so on. The yard is rather full, for the brethren have been here, I think, some seventy years." (*The American in Ireland*, as quoted in the *Athenæum*, July 21. 1838.)

Railroads in Ireland have been projected by a government commission, to intersect the country in various directions, from Belfast on the north, to Cork on the south; and the remainder of the country is to have new and improved lines of common road carried through it. (*Morn. Chron.*, Aug. 9.) This improvement; the poor-laws, about to be introduced; and a national system of education, which cannot be withheld longer than a year or two; will soon raise Ireland to a pitch of prosperity that few of us at present can form an idea of. We observe in the *Report* of the Railway Commissioners, the state of the Irish labourers noticed in the following terms:—"From north to south, indications of progressive improvement are every where visible, and most so in places which are accessible to the influence of steam navigation; but these signs of growing prosperity are, unhappily, not so discernible in the condition of the labouring people, as in the amount of the produce of their labour. The proportion of the latter reserved for their use is too small to be consistent with a healthy state of society. The pressure of superabundant population (at least with respect to the resources as yet developed for their maintenance and occupation) is perpetually and powerfully acting to depress them." (*Report*, &c., as quoted in *Morn. Chron.*, Aug. 9.)

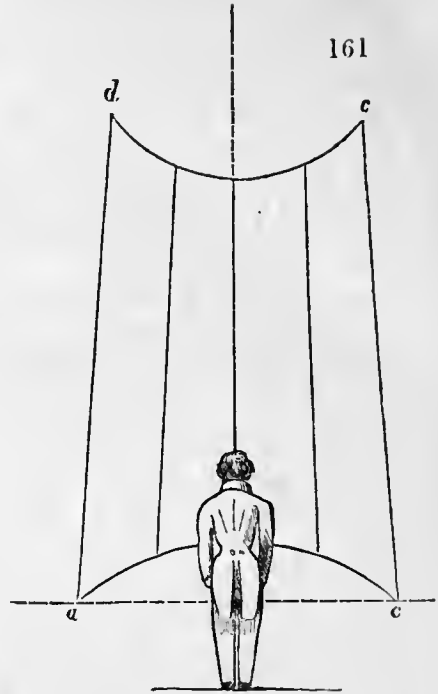
ART. II. *Retrospective Criticism.*

ERRATA. — In p. 342. line 3., for “buttresses” read “buttressed;” and in line 31., for “even” read “men.” In p. 344. last line but six, for “alarm” read “alarum.”

Victoria Rooms, Bristol. (p. 323.) — In the *Architectural Magazine* for July, p. 323., it is stated that the Victoria Rooms, Bristol, were designed by Mr. S. G. Tovey. Permit me to say that Mr. Tovey was only employed by the editor of the *Bristol Mirror* to make a perspective drawing of the building, to be inserted in his newspaper, from the plaster model in my local office. Whether or not he has succeeded to the extent desired, does not require any great judgment to perceive; although I believe it has answered the end for which it was done. Messrs. Whitehead and Co. made the woodcut. Being the architect of the Victoria Rooms, it would have afforded me much pleasure to have sent the drawings of them for your inspection, if there had been any but those wanted for the use of the building; as I always feel much satisfaction in obtaining the opinion of the profession, and have read with benefit your numerous publications.—*Charles Dyer.* 36. Guilford Street, July 6. 1838.

Parsey's Natural Convergence of Perpendiculars. (p. 282.) — In reply to Kata Phusin's remarks, I beg to offer the following observations:—The introduction of my system has brought about the consciousness of an effect, unavoidable in common observation. The principle of natural convergence is admitted: it cannot be denied. “The disputed point is, whether vertical convergence should be represented in a drawing.” If there be any reason for converging *horizontals*, there is the same for *perpendiculars*. I believe man has five senses, and no more; that by these only he gains sound knowledge, and that judgment is a thorough understanding of them, and acting strictly by their dictates. Objects present to the sight natural appearances. Drawings ought to be representations of them. Productions conformable to none of the senses are nonsense. Will the image of the front of a building (*b c d e*, fig. 99. p. 282.) be the same from the point *a*, as from one opposite the centre, or any other point? Certainly not. Will it not foreshorten from the point *a*? It must. If it foreshorten, will it not converge? It must. Can the eye move from the centre without these effects, instantly commencing and increasing in a geometrical ratio, according to the increased obliquity of the view? Does its vertical or horizontal position make any difference to the natural image? If Kata Phusin will read p. 45. of *Perspective Rectified*, he will see the delusion of the vertical pane of glass explained; showing that its position being parallel to the objects seen through it, the tracing on it will produce parallel perpendicular lines, whether the pane be horizontally direct or oblique to the vision. I perceive that the image of my window, through which I see objects, runs itself into perspective, as well as the objects projected through it. The plane of the picture or image seen I always find to be at right angles to the axis of vision, so clearly demonstrated by the spectrometer, which Kata Phusin says I “must put aside in applying it to the eye.” I can apply it to nothing else. It bounds the indefinite view, determines the natural quantity of the field of view, contrasts the perpendiculars of the picture with the perpendiculars on the earth, and defines the foreshortening and convergence of surfaces in every position. If I look horizontally forwards, it shows the vertical plane of the picture. In sketching alps, precipices, or bird's-eye views, it shows the inclination and declination of the plane, or, in revolving the view horizontally, the transverse directions of the plane. With this instrument there will be always 30° in all directions about the point of sight, or axis of vision. No object will project itself through this natural medium with the double convergence exemplified by Kata Phusin “by means of reflections in water.” That effect is only naturally portrayed when there is water to reflect the inverted convergence. That perpendiculars converge when their

situation produces it in the eye, is shown in the following diagram. Let $abcd$, fig. 161, be a large semi-cylinder. Conceive a person standing opposite to the middle, with the eye below its centre. In seeing, or representing what is seen, the perpendicular in the axis of vision, or direct view, will appear perpendicular, while ad , bc , will converge, and the intermediate parallels will also converge to a common point. The curve dc will appear less than ab . Now, as the eye of every one is a centre to himself, suppose the lines of that cylinder to be the perpendiculars of buildings in the same position, would they cease to appear to converge, because they are not lines in a cylinder, which no draughtsman would delineate by parallel lines? All perpendiculars appear to converge on the principle of the cylinder, and only the *one* cutting the axis of vision can appear upright. The ordinary observer, by revolving



the head, makes each perpendicular the same in effect as a single one in vision. What sound reasons, then, can be advanced against the representation of natural convergence? I feel satisfied that Claude and Canaletti, and every other eminent artist, would have practised it, if they had perceived and defined the natural laws. I may also say, with perfect confidence, that Kirby's *Brook Taylor's Perspective* would not have had the frontispiece it has, with its admonition, if that great mathematician had known the science of vision; for in the body of the work, amid other optical errors, we have cylinders viewed obliquely with circular, instead of elliptical, ends; an error no less inconsistent than the reversed size of the objects, and the man on the top of a distant hill lighting his pipe from the candle held from the window by an old woman. The objections offered to the representation of perpendicular convergence seem to me to arise from a misconception of the natural plane of the picture, and the present inability to produce the true effects. My working methods are extremely simple, and not, as conceived, more complicated than the old system. The slightest convergence is readily produced vertically, as well as horizontally. Mr. Nicholson invented the centrolinead to overcome the practical difficulty of converging to inaccessible horizontal vanishing points. His views must have been very different from the arguments advanced in p. 283., and, indeed, of all who know the value and use of that scientific instrument. I have pleasure in stating that able draughtsmen at Manchester were delighted in finding the practical utility of that invention, which before did only half its purpose. I not only feel a confidence in the practicability of my theory, but I am borne out in that confidence by the first talent of this country. I certainly can excuse Kata Phusin for doubting, if all his and other objections can be answered: it is a pithy subject; and, between habits and impressions, confirmed by undisturbed maxims, and the delusions of the uncultivated eye, continual qualms will attend the investigation. The solution of this problem may be justly viewed in a national light; and, that its benefits might be enjoyed by the present as well as a future generation, nothing would be more in my way, than to meet the first talent of the day in "fair discussion," to set at rest every doubt on the subject, and to establish a perfect science of vision and linear perspective. — *Arthur Parsey*. 91. Regent Street, June 8. 1838.

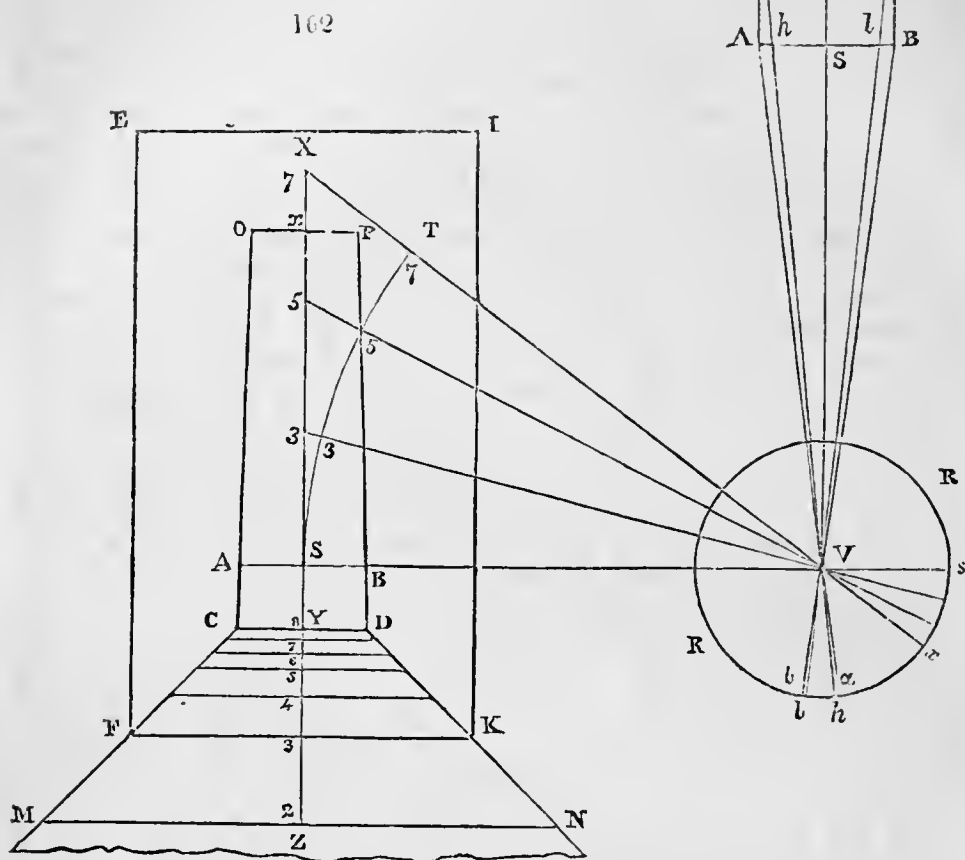
Parsey's Perspective Rectified. (p. 282.)—I have a desire to make a few

observations on the subject of *Perspective Rectified*; and, though the truth of Parsey's system is not of the first importance, still it possesses sufficient, in regard to perspective designs in architecture which are intended to be carried into execution, to demand attention. Mr. Pococke, Kata Phusin, and others, admit the truth of the principle of the convergence of parallel lines, but deny that the convergence is *perceptible*, or that it *ought to be represented*. The object of these observations is to show the contrary, and to show that Mr. Parsey, besides being wrong in denying the convergence of horizontal lines, is in error in his mode of applying the principle of the convergence of perpendiculars to practice.

Suppose $M C D N$, *fig.* 162., to be a ground plan 80 ft. in length, and 20 ft. in breadth; suppose a spectator to be stationed at z ; let his eye be 10 ft. from the ground, and viewing a perpendicular standard $Y X$, 70 ft. high, at 80 ft. distance. At the distance of 30 ft. from the spectator, let a transparent perspective plane $F E I K$ be introduced between him and the standard. In this case, s will be the point of sight, and the centre of the picture, and v will be the point of distance, 80 ft. Now, according to the present system of perspective, it is assumed that, if lines be drawn, or if we conceive the rays to flow, from the points which mark the equal portions of the standard to the eye, and to leave their traces in the perspective plane on passing through, those rays would mark off equal portions of the plane, and those portions would convey a true image of the standard to the mind, even if the original standard were removed; but (and mark, this fact is implied in the treatises on perspective), before those portions of the plane will give a true image of the standard to the mind, the same distance from the plane, and the same height of the eye with regard to it, must be observed.

In the application of this theory of perspective to practice, this fact has been hitherto unheeded, and a disagreement between theory and observation is a necessary consequence. If, as Mr. Pococke says (*p.* 94.), "the eye puts not only natural objects into perspective, but also the picture or representation of them, so that the lines of the diagrams may be taken as the actual lines of the objects, instead of the representatives," it can only do so when the position and distance of the eye with regard to the picture, shall correspond to the points of sight and distance of that picture; so that Mr. Pococke will perceive that the particular inconvenience which he mentions (*viz.*, "when we view any picture, we must always have our eye directly opposite the junction of the horizontal and vertical lines to which the others converge, and at one particular distance from it, and must look steadfastly and steadily at that point alone, or else all the parts would be out of drawing,") attends the adherence to the present system, and which it should be the object of Mr. Parsey's system to remedy. Now, *figs.* 31. and 34. (*p.* 92.), Mr. Pococke says, "are not what are to be drawn, but only the figures which are formed in the eye." But, if this be true, I contend that the forming of these figures in the eye, or on the retina, can be accomplished only by the particular inconvenience mentioned above; and, if we would avoid this, we must draw the figures as they are there shown; in support of which I offer the following reasons.

I have said that there is a disagreement between the theory of perspective and observation. The theory of the present system requires that we should look at a picture from a given point and at a given distance; but it was never intended that we should, and we never do, view a picture in that position; and convenience requires that we should adopt some system, in delineating original objects in a picture, which shall, at any distance, convey the nearest approximation to the true image to the mind. This disagreement between theory and observation was partly perceived by the Jesuit in his system of perspective (*see p.* 128.); and he endeavoured to rectify the error, as far as regards human figures, by a rule which is equally applicable to figures of all denominations. The rule is, "to find in what proportion equal figures grow



less to the eye, when placed directly over one another." For instance, in the above diagram, where s is the point of sight and centre of picture, and v the point of distance, 80 ft., vx is the representation on a plane of a standard 70 ft. high, which standard, from s to x , is divided into equal portions of 20 ft. each: but experience shows us that the upper portions would appear considerably less to the spectator stationed at z ; yet the representation does not, as it ought, convey to us the sensible idea of a diminution. The rule which the Jesuit lays down for finding the diminution is, to draw lines from the equal portions of sx to the eye, or point of distance, v , and, with the compasses at v , and at distance vs , draw the arc st ; then the divisions of the arc, caused by the lines drawn from the equal portions of sx to the eye, will give the proportionate diminution of the corresponding portions, according to their perpendicular altitude from the point of sight. Consequently, the length of the arc st is the proportionate extent of the surface of the retina affected by the rays flowing from sx , and is therefore the apparent length of the line sx ; and which ought to be the length of the line drawn on the perspective plane, in order to give an exact idea of the object; which the line sx would fail to do, unless, in viewing the plane, the distance and the height of the eye exactly correspond to the points of sight and distance of that plane. If this rule have any foundation in truth, there is sufficient evidence of the perceptibility of the convergence of parallel lines to demand our representing it; and that this rule has such a foundation, will be more clearly evinced by a consideration of the visual apparatus.

Let $R R$, *fig.* 163., be a section of the spherical surface of the eyeball, or the retina, s the point of sight, v the point of distance, and $v s$ the axis of the eye. Now, assuming Brewster's principle to be correct (see *Optics*, Lardner's *Cyc.*), v will be the centre of visible direction of the eye, "for, as the line of visible direction is a line perpendicular to the retina, and as the interior surface of the eyeball is, as nearly as possible, a perfect sphere, all lines perpendicular to the retina must pass through one point, and this point will be the centre of the spherical surface; and every point of a visible object will be seen in the direction of a line drawn from the visible point to this centre." Therefore, if, from the points s and x , and the intermediate points, lines be drawn through the centre of visible direction v until they meet on the surface of the retina, they will show the extent of the surface affected, which will be $s x$; and that extent of surface affected, and the intermediate divisions, will give the apparent length, and the proportionate diminution of the line $s x$, and its intermediate divisions. We here see the fact of the diminution accounted for on physical principles. If the rays, on passing through the eye, were received on a retina the surface of which was plane, instead of concave, no diminution of the equal portions would take place: and it is in consequence of inattention to this fact that the disagreement between theory and observation occurs.

The convergence of parallels being admitted by Mr. Pococke, Kata Phusin, and others, I cannot see how it can be denied that the convergence is perceptible, and ought to be represented, without, at the same time, denying what Mr. Pococke admits; viz. the truth of the optical law, that objects appear greater or smaller, according as they are viewed under a greater or smaller angle. Suppose, for instance, the spectator at z were viewing a vertical plane 70 ft. high, and 20 ft. broad, at the distance of 80 ft.: $v x$ is 70 ft. high; but we have shown that $v \tau$ is the length that ought to be represented on the perspective plane, which will be about equal to $v x$. Let $c o p d$ be the vertical plane, and $A B$ equal to 20 ft. Now, the point s is distant 80 ft. from the spectator's eye, and the point x nearly 100 ft.; surely, then, a difference of distance equal to 20 ft. will make a difference of angles sufficient to make the difference of the length of two equal objects abundantly perceptible. If, then, we suppose $v s$, *fig.* 163., to be the axis of the eye, and make $v s$ and $v x$ equal to $v s$ and $v x$, *fig.* 162., and make $A B$, *fig.* 163., equal to $A B$, *fig.* 162., and likewise make $u l$ equal to $A B$, and draw lines from those points, through the centre of visible direction v , to the retina, we shall see that the line $h l$ affects a considerably less portion of the retina than $A B$; consequently, $h l$ is the apparent length of $h l$, and is the apparent length of the top $o p$ of the vertical plane $c o p d$, as seen by the spectator, and very far from being *imperceptible*. $c o$, $o p$, and $p d$, should have been curved lines, as drawn by Mr. Pococke in the figures in p. 92.

These illustrations demonstrate the perceptibility of the admitted facts, the convergence of parallels; they also demonstrate that equal figures, when placed directly over each other, diminish in proportion to their distance from the point of sight. They demonstrate the constant relation of diminished length with increasing height; and that the usual mode of representing objects in perspective fails to convey a correct image, except the eye maintain one exact position with regard to the points of sight and distance; which may be shown by setting off on $s x$, *fig.* 162., the division of the arc $s \tau$, and removing the eye to a greater distance from, and exactly opposite to, $s x$; when, by drawing lines from the equal portions of $s x$ through the centre of visible direction, until they meet upon the retina, we find that the relation of diminished length with increasing height is totally destroyed; while, if we follow the same process with the divisions corresponding to the arc $s \tau$, we find that, in spite of the alteration of position and distance, the relation is maintained, not precisely, but proximately.

If it should be admitted that the principle upon which these illustrations are based is true, it will admit of very easy adaptation to practice. If it be

denied, then there is an end altogether of Mr. Parsey's doctrines. Like all new principles, when attempted to be put in practice, it appears an absurd innovation on the old, even to those who admit its truth. Habit, association, and prejudice having convinced us that parallel lines always appear equally distant, it becomes very difficult to believe the contrary, especially if we believe visual perceptions to be intuitive; but, as Dr. Thomas Brown says, we must remember "that vision is an art of long and tedious acquirement; a mixed product of innumerable calculations and observations; that we learn to see, and that vision is, what Swift paradoxically defined it to be, *the art of seeing things that are invisible.*" — *Chappell Smith.* June 5. 1838.

ART. III. *Royal Institute of British Architects.*

JUNE 25. — P. F. Robinson, V. P., in the chair.

John Foulston, Fellow, of Plymouth, attending for the first time, since his election, was duly admitted by the chairman.

The secretary communicated that the Council had requested His Lordship the president to apply for Her Majesty's permission to allow Mr. Behnes a sitting for the purpose of taking a bust of the Queen, to be deposited in the Institute, as patroness; and that the following letter on the subject had been written by His Lordship the president.

"St. James's Square.

"My dear Lord, I have been requested, as president of the Institute of British Architects, to solicit your kind assistance as one of our members. The Institute is very ambitious of placing in its library a bust of Her Majesty, who has been graciously pleased to honour us by becoming our patroness. Mr. Behnes, who has received the appointment of sculptor to Her Majesty, has signified his readiness to execute it, if Her Majesty's sanction can be obtained; and the fact of being already in the honourable and distinguished situation of sculptor to Her Majesty, may obviate any difficulty which might arise from Her Majesty's reluctance to grant to one public institution what she might be frequently called upon to repeat in favour of others; for Mr. Behnes, being once in possession of Her Majesty's likeness, would be enabled to supply further demands without further trespassing upon Her Majesty's patience. If you can, without impropriety, lay our wishes before Her Majesty, and she should be graciously pleased to accede to our prayer, it will be most deeply felt, and most gratefully acknowledged, by the Institute, in whose behalf I write. I remain, my dear Lord, very faithfully yours,

(Signed) DE GREY."

"*The Marquess of Lansdowne.*"

(Reply.)

"Berkeley Square, June 20. 1838.

"My dear Lord, I had an opportunity lately of laying before Her Majesty the request which you had desired me to convey to her from the Society of Architects, that she would be pleased to sit for them to Mr. Behnes, her sculptor, for a bust. Her Majesty received the expression of their wishes most graciously, and very kindly promised to sit to Mr. Behnes for that purpose, when her leisure admitted of it; adding, however, at the same time, that she had been much pressed some time ago to sit to Sir Francis Chantry for a bust, and considered herself in some degree as under a promise to do so; so that she could not undertake to say to which she might give precedence, but would leave that to be settled hereafter. I remain ever, my dear Lord, very faithfully yours,

(Signed) LANSDOWNE."

"*The Earl De Grey.*"

Amongst the donations announced were: Durand's *Parallèle des E'difices anciens et modernes*; presented by Sir Alexander Grant. Guide to St. Petersburg; presented by Dr. Granville. Copy of his Work on the Spas of Germany, and various Plans and Elevations of Hospitals, and scientific Institutions in Paris, chiefly from drawings taken by himself. J. Foulston, Fellow, also presented a Model of the Scaffold for erecting the Devonport Memorial.

The thanks of the members having been voted to the various donors, Mr. Griffiths proceeded with his Lectures on Chemistry as applied to Construction. Subject: Marbles, Limestone, Mortars, and Cement. — Adjourned.

July 9. — P. F. Robinson, V. P., in the chair. Archibald Simpson, architect, of Aberdeen, was elected as Fellow. G. Vulliamy of Pall Mall, and H. G. Atkinson of Upper Gloucester Place, Regent's Park, as Associates.

Various donations were announced as having been received. A Summary of the first three numbers of the *Ephemeris* of the Archæological Society of Athens was read, translated from the original by Lieutenant-Colonel Leake. (See p. 383.) Mr. Griffiths read the fourth paper of his series. Subject: Paints, Varnishes, &c. — Adjourned.

July 23. — Earl de Grey, President, in the chair; J. G. Wilkinson, Esq., Honorary Member; and Messrs. Eginton and Vulliamy, Associates, attending for the first time since their election, were duly admitted by His Lordship in their respective classes. Letters were read from the Chevalier Gesse of Naples, and Signor Ittar of Catania, Honorary and Corresponding Members. Various donations were announced as having been received, amongst which were: On the Manners and Customs of the Egyptians, by J. G. Wilkinson; presented by the author. Inigo Jones's Designs, Pozzo's Perspective, Swan's Architecture, Daniel's Vitruvius, Davila's Architecture, and various other works; presented by H. E. Kendall, Fellow. Letters from the Rajah of Tanjore, and Colonel M'Lean, resident, were read; and the secretary explained the several drawings referred to, consisting of Eleven Illustrations of Pagodas, Temples, Halls, and Palaces at Tanjore, Avidiarcoil, &c.; also the Plan of the Island of Sheevasamoodram, presented by Colonel M'Lean. Mr. Donaldson described the arrangement of a Turkish Bath at Bergamo, in Asia Minor. Mr. Griffiths completed his course of papers on Chemistry as applied to Construction, by describing the elementary principles of Heating and Ventilation in Buildings.

The president expressed to Mr. Griffiths the satisfaction derived by the members and visitors from the instruction conveyed in his interesting course. His Lordship then concluded, by an address to the meeting, enumerating the results of the session, and calling upon the members to avail themselves of the opportunities afforded by the recess, for procuring information to lay before the Institute during the next session.

Resolved, — That the most grateful thanks of the Institute are due to His Lordship for his attendance this evening, and for the advantages resulting to the body from his continued countenance and support.

The Architectural Society held a Special General Meeting on the 3d of July, at which the following Resolution was passed: —

"That a junction of the two Architectural Societies would, if formed upon principles of mutual concession, be highly advantageous to the profession; and that a Committee of five members be forthwith appointed, to confer with a similar number of gentlemen on the part of the Royal Institute of British Architects, and to report the result of such conference to the Society at large on or before the 1st of August following."

"In pursuance of the above Resolution, the following members were the same evening appointed: — Mr. W. B. Clarke, President; Mr. Barnes, Mr. Wyatt, Mr. Moore, Mr. Crake, Mr. Ferrey."

This having been communicated to the Council, Messrs. Barry, Hardwick, and Robinson, Vice-Presidents; and Messrs. Kendall, Taylor, and Donaldson; were appointed to confer with the Committee of the Architectural Society.

These gentlemen, accordingly, had two meetings, and mutually agreed to the following scheme for the union of the two Societies:—

1. The Members of the Architectural Society, who have been in practice seven years, to join the Royal Institute of British Architects as Fellows.

2. Those who have been in practice five years to enter in a new class, to be expressly constituted, under the title of "*Associated Fellows*," and to pay annually three guineas.

3. The Associated Fellows to have all the privileges of Fellows, except voting, and eligibility to offices.

4. The Members elected into the class of "*Associated Fellows*," become by right, and without ballot, Fellows, upon announcing their intention to join such class, at the expiration of their having been in practice seven years; and to pay two guineas, to make their contribution on admission five guineas, equal to that paid by the Fellows of the Royal Institute of British Architects.

5. The class of Associated Fellows to cease at the end of two years.

6. Those under five years to join as Associates, and to pay annually two guineas.

7. A permanent class to be created, called the "*Students' Class*," at a subscription of one guinea per annum, to receive the students of the Architectural Society.

8. Their privilege to attend all Ordinary Meetings and Lectures.

9. The Members of the Architectural Society to be elected without ballot in their respective classes, as conforming to paragraph 21. of Section IV. of the By-laws of this Institute, upon the introduction of the Council.

10. The several Members so joining to sign the Declaration of the Royal Institute of British Architects.

11. The President and one other Member (or any two) of the Architectural Society to be recommended by the Council of the Royal Institute of British Architects for election forthwith, as members of the Council.

12. The Members of the Architectural Society, who join the Royal Institute of British Architects, to make over to the Royal Institute of British Architects all their shares in the funded property, books, casts, prints, drawings, furniture, and other effects of the Architectural Society, and the same to fall into and become an integral part of the property of the Corporation.

The Institute held a Special General Meeting on the 31st of July, and approved the foregoing propositions. On the following evening, the Architectural Society held also a Special General Meeting, at which the opponents of the scheme mustered in strong numbers; and, unfortunately, the absence abroad, and in the country, of several who supported the measure, a very bad evening as to the weather, and the prevalent opinion of the desirableness of the union and the fairness of the proposition, caused the absence of so many of its friends, that it was decided by a mere majority of one or two, as not being desirable that a junction of the two Architectural Societies should be formed upon the terms contained in the scheme agreed to at the conference.

In consequence of this decision, Mr. Walker, the chairman of the Meeting, and Messrs. Ferrey, Moore, Wright, Bury, Lee, Parish, Woodthorpe, Brandon, Flower, Johnson, and Watson, have withdrawn, and several others have expressed their determination to retire from the Architectural Society. The best friends of the two bodies were extremely anxious to effect the junction, and to destroy the appearance of rivalry to which the existence of two Societies in the same profession seemed to give rise.

THE ARCHITECTURAL MAGAZINE.

OCTOBER, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *The Poetry of Architecture.* By KATA PHUSIN.

No. 3. THE VILLA. (Continued.)

III. *The English Villa. — Principles of Composition.*

IT has lately become a custom, among the more enlightened and refined of metropolitan shopkeepers, to advocate the cause of propriety in architectural decoration, by ensconcing their shelves, counters, and clerks in classical edifices, agreeably ornamented with ingenious devices, typical of the class of articles to which the tradesman particularly desires to direct the public attention. We find our grocers enshrined in temples whose columns are of canisters, and whose pinnacles are of sugarloaves. Our shoemakers shape their soles under Gothic portals, with pendants of shoes, and canopies of Wellingtons; and our cheesemongers will, we doubt not, soon follow the excellent example, by raising shops the varied diameters of whose jointed columns, in their address to the eye, shall awaken memories of Staffa, Pæstum, and Palmyra; and, in their address to the tongue, shall arouse exquisite associations of remembered flavour, Dutch, Stilton, and Strachino. Now, this fit of taste on the part of our tradesmen is only a coarse form of a disposition inherent in the human mind. Those objects to which the eye has been most frequently accustomed, and among which the intellect has formed its habits of action, and the soul its modes of emotion, become agreeable to the thoughts, from their correspondence with their prevailing cast, especially when the business of life has had any relation to those objects; for it is in the habitual and necessary occupation that the most painless hours of existence are passed: whatever be the nature of that occupation, the memories belonging to it will always be agreeable, and, therefore, the objects awakening such memories will invariably be found beautiful, whatever their character or form. It is thus that taste is the child and the slave of memory; and beauty is tested, not by any fixed standard, but by the chances of association; so that in every domestic building evidence will be found of the kind of life through which its owner has passed, in the operation of the habits of mind which that life has induced. From the super-

annuated coxswain, who plants his old ship's figure-head in his six square feet of front garden at Bermondsey, to the retired noble, the proud portal of whose mansion is surmounted by the broad shield and the crested gryphon, we are all guided, in our purest conceptions, our most ideal pursuit, of the beautiful, by remembrances of active occupation, and by principles derived from industry regulate the fancies of our repose.

It would be excessively interesting to follow out the investigation of this subject more fully, and to show how the most refined pleasures, the most delicate perceptions, of the creature who has been appointed to eat bread by the sweat of his brow, are dependent upon, and intimately connected with, his hours of labour. This question, however, has no relation to our immediate object, and we only allude to it, that we may be able to distinguish between the two component parts of individual character; the one being the consequence of continuous habits of life acting upon natural temperament and disposition, the other being the *humour* of character, consequent upon circumstances altogether accidental, taking stern effect upon feelings previously determined by the first part of the character; laying on, as it were, the finishing touches, and occasioning the innumerable prejudices, fancies, and eccentricities, which, modified in every individual to an infinite extent, form the visible veil of the human heart.

Now, we have defined the province of the architect to be, that of selecting such forms and colours as shall delight the mind, by preparing it for the operations to which it is to be subjected in the building. Now, no forms, in domestic architecture, can thus prepare it more distinctly than those which correspond closely with the first, that is, the fixed and fundamental, part of character, which is always so uniform in its action, as to induce great simplicity in whatever it designs. Nothing, on the contrary, can be more injurious than the slightest influence of the *humours* upon the edifice; for the influence of what is fitful in its energy, and petty in its imagination, would destroy all the harmony of parts, all the majesty of the whole; would substitute singularity for beauty, amusement for delight, and surprise for veneration. We could name several instances of buildings erected by men of the highest talent, and the most perfect general taste, who yet, not having paid much attention to the first principles of architecture, permitted the humour of their disposition to prevail over the majesty of their intellect, and, instead of building from a fixed design, gratified freak after freak, and fancy after fancy, as they were caught by the dream or the desire; mixed mimicries of incongruous reality with incorporations of undisciplined ideal; awakened every variety of contending feeling and unconnected memory; consummated confusion of form by trickery

of detail ; and have left barbarism, where half the world will look for loveliness.

This is a species of error which it is very difficult for persons paying superficial and temporary attention to architecture to avoid : however just their taste may be in criticism, it will fail in creation. It is only in moments of ease and amusement that they will think of their villa : they make it a mere plaything, and regard it with a kind of petty exultation, which, from its very nature, will give liberty to the light fancy, rather than the deep feeling, of the mind. It is not thought necessary to bestow labour of thought, and periods of deliberation, on one of the toys of life ; still less to undergo the vexation of thwarting wishes, and leaving favourite imaginations, relating to minor points, unfulfilled, for the sake of general effect.

This feeling, then, is the first to which we would direct attention, as the villa architect's chief enemy : he will find it perpetually and provokingly in his way. He is requested, perhaps, by a man of great wealth, nay, of established taste in some points, to make a design for a villa in a lovely situation. The future proprietor carries him up-stairs to his study, to give him what he calls his "ideas and materials," and, in all probability, begins somewhat thus : — "This, sir, is a slight note : I made it on the spot : approach to Villa Reale, near Pozzuoli. Dancing nymphs, you perceive ; cypresses, shell fountain. I think I should like something like this for the approach : classical, you perceive, sir ; elegant, graceful. Then, sir, this is a sketch, made by an American friend of mine : Whee-whaw-Kantamaraw's wigwam, king of the — Cannibal Islands, I think he said, sir. Log, you observe ; scalps, and boa constrictor skins : curious. Something like this, sir, would look neat, I think, for the front door ; don't you ? Then, the lower windows, I've not quite decided upon ; but what would you say to Egyptian, sir ? I think I should like my windows Egyptian, with hieroglyphics, sir ; storks and coffins, and appropriate mouldings above : I brought some from Fountains Abbey the other day. Look here, sir ; angels' heads putting their tongues out, rolled up in cabbage leaves, with a dragon on each side riding on a broomstick, and the devil looking on from the mouth of an alligator, sir.* Odd, I think ; interesting. Then the corners may be turned by octagonal towers, like the centre one in Kenilworth Castle ; with Gothic doors, portcullis, and all, quite perfect ; with cross slits for arrows, battlements for musketry, machicolations for boiling lead, and a room at the top for drying plums ; and the conservatory at the bottom, sir, with Virginian creepers up the towers ; door supported by sphinxes, holding scrapers in their fore paws, and having their tails prolonged into warm-water pipes, to keep

A ctually carved on one of the groins of Roslin Chapel.

the plants safe in winter, &c.” The architect is, without doubt, a little astonished by these ideas and combinations; yet he sits calmly down to draw his elevations, as if he were a stonemason, or his employer an architect; and the fabric rises to electrify its beholders, and confer immortality on its perpetrator. This is no exaggeration: we have not only listened to speculations on the probable degree of the future majesty, but contemplated the actual illustrious existence, of several such buildings, with sufficient beauty in the management of some of their features to show that an architect had superintended them, and sufficient taste in their interior economy to prove that a refined intellect had projected them; and had projected a Vandalism, only because fancy had been followed instead of judgment; with as much *nonchalance* as is evinced by a perfect poet, who is extemporising doggerel for a baby; full of brilliant points, which he cannot help, and jumbled into confusion, for which he does not care.

Such are the first difficulties to be encountered in villa designs. They must always continue to occur in some degree, though they might be met with ease by a determination on the part of professional men to give no assistance whatever, beyond the mere superintendence of construction, unless they be permitted to take the whole exterior design into their own hands, merely receiving broad instructions respecting the style (and not attending to them unless they like). They should not make out the smallest detail, unless they were answerable for the whole. In this case, gentlemen architects would be thrown so utterly on their own resources, that, unless those resources were adequate, they would be obliged to surrender the task into more practised hands; and, if they were adequate, if the amateur had paid so much attention to the art as to be capable of giving the design perfectly, it is probable he would not erect anything strikingly abominable.

Such a system (supposing that it could be carried fully into effect, and that there were no such animals as sentimental stonemasons to give technical assistance) might, at first, seem rather an encroachment on the liberty of the subject, inasmuch as it would prevent people from indulging their edificatorial fancies, unless they knew something about the matter, or, as the sufferers would probably complain, from doing what they liked with their own. But the mistake would evidently lie in their supposing, as people too frequently do, that the outside of their house *is* their own, and that they have a perfect right therein to make fools of themselves in any manner, and to any extent, they may think proper. This is quite true in the case of interiors: every one has an indisputable right to hold himself up as a laughing-stock to the whole circle of his friends and acquaintances, and to consult his

own private asinine comfort by every piece of absurdity which can in any degree contribute to the same ; but no one has any right to exhibit his imbecilities at other people's expense, or to claim the public pity by inflicting public pain. In England, especially, where, as we saw before, the rage for attracting observation is universal, the outside of the villa is rendered, by the proprietor's own disposition, the property of those who daily pass by, and whom it hourly affects with pleasure or pain. For the pain which the eye feels from the violation of a law to which it has been accustomed, or the mind from the occurrence of anything jarring to its finest feelings, is as distinct as that occasioned by the interruption of the physical economy, differing only inasmuch as it is not permanent ; and, therefore, an individual has as little right to fulfil his own conceptions by disgusting thousands, as, were his body as impenetrable to steel or poison, as his brain to the effect of the beautiful or true, he would have to decorate his carriage roads with caltrops, or to line his plantations with upas trees.

The violation of general feelings would thus be unjust, even were their consultation productive of continued vexation to the individual : but it is not. To no one is the architecture of the exterior of a dwelling-house of so little consequence as to its inhabitant. Its material may affect his comfort, and its condition may touch his pride ; but for its architecture, his eye gets accustomed to it in a week, and, after that, Hellenic, Barbaric, or Yankee, are all the same to the domestic feelings, are all lost in the one name of home. Even the conceit of living in a *châlet*, or a wigwam, or a pagoda, cannot retain its influence for six months over the weak minds which alone can feel it ; and the monotony of existence becomes to them exactly what it would have been had they never inflicted a pang upon the unfortunate spectators, whose unaccustomed eyes shrink daily from the impression to which they have not been rendered callous by custom, or lenient by false taste. If these considerations are just when they allude only to buildings in the abstract, how much more when referring to them as materials of composition, materials of infinite power, to adorn or destroy the loveliness of the earth. The nobler scenery of that earth is the inheritance of all her inhabitants : it is not merely for the few to whom it temporarily belongs, to feed from like swine, or to stable upon like horses, but it has been appointed to be the school of the minds which are kingly among their fellows, to excite the highest energies of humanity, to furnish strength to the lordliest intellect, and food for the holiest emotions of the human soul. The presence of life is, indeed, necessary to its beauty, but of life congenial with its character ; and that life is not congenial which thrusts presumptuously forward, amidst the calmness of the universe, the

confusion of its own petty interests and grovelling imaginations, and stands up with the insolence of a moment, amidst the majesty of all time, to build baby fortifications upon the bones of the world, or to sweep the copse from the corrie, and the shadow from the shore, that fools may risk, and gamblers gather, the spoil of a thousand summers.

It should therefore be remembered, by every proprietor of land in hill country, that his possessions are the means of a peculiar education, otherwise unattainable, to the artists, and, in some degree, to the literary men, of his country; that, even in this limited point of view, they are a national possession, but much more so when it is remembered how many thousands are perpetually receiving from them, not merely a transitory pleasure, but such thrilling perpetuity of pure emotion, such lofty subject for scientific speculation, and such deep lessons of natural religion, as only the work of a Deity can impress, and only the spirit of an immortal can feel: they should remember that the slightest deformity, the most contemptible excrescence, can injure the effect of the noblest natural scenery, as a note of discord can annihilate the expression of the purest harmony; that thus it is in the power of worms to conceal, to destroy, or to violate, what angels could not restore, create, or consecrate; and that the right, which every man unquestionably possesses, to be an ass, is extended only, in public, to those who are innocent in idiotism, not to the more malicious clowns who thrust their degraded motley conspicuously forth amidst the fair colours of earth, and mix their incoherent cries with the melodies of eternity, break with their inane laugh upon the silence which Creation keeps where Omnipotence passes most visibly, and scrabble over with the characters of idiocy the pages that have been written by the finger of God.

These feelings we would endeavour to impress upon all persons likely to have anything to do with embellishing, as it is called, fine natural scenery; as they might, in some degree, convince both the architect and his employer of the danger of giving free play to the imagination in cases involving intricate questions of feeling and composition, and might persuade the designer of the necessity of looking, not to his own acre of land, or to his own peculiar tastes, but to the whole mass of forms and combination of impressions with which he is surrounded.

Let us suppose, however, that the design is yielded entirely to the architect's discretion. Being a piece of domestic architecture, the chief object in its exterior design will be to arouse domestic feelings, which, as we saw before, it will do most distinctly by corresponding with the first part of character. Yet it is still more necessary that it should correspond with its situation; and hence arises another difficulty, the reconciliation of correspond-

ence with contraries; for such, it is deeply to be regretted, are too often the individual's mind, and the dwelling-place it chooses. The polished courtier brings his refinement and duplicity with him, to ape the Arcadian rustic in Devonshire; the romantic rhymers takes a plastered habitation, with one back window looking into the green park; the soft votary of luxury endeavours to rise at seven, in some Ultima Thule of frost and storms; and the rich stock-jobber calculates his per-centages among the soft dingles and woody shores of Westmoreland. When the architect finds this to be the case, he must, of course, content himself with suiting his design to such a mind as ought to be where the intruder's is; for the feelings which are so much at variance with themselves in the choice of situation, will not be found too critical of their domicile, however little suited to their temper. If possible, however, he should aim at something more; he should draw his employer into general conversation; observe the bent of his disposition, and the habits of his mind; notice every manifestation of fixed opinions, and then transfer to his architecture as much of the feeling he has observed as is distinct in its operation. This he should do, not because the general spectator will be aware of the aptness of the building, which, knowing nothing of its inmate, he cannot be; nor to please the individual himself, which it is a chance if any simple design ever will, and who never will find out how well his character has been fitted; but because a portrait is always more spirited than a composed countenance; and because this study of human passions will bring a degree of energy, unity, and originality into every one of his designs (all of which will necessarily be different), so simple, so domestic, and so lifelike, as to strike every spectator with an interest and a sympathy, for which he will be utterly unable to account, and to impress on him a perception of something more ethereal than stone or carving, somewhat similar to that which some will remember having felt disagreeably in their childhood, on looking at any old house authentically haunted. The architect will forget in his study of life the formalities of science, and, while his practised eye will prevent him from erring in technicalities, he will advance, with the ruling feeling, which, in masses of mind, is nationality, to the conception of something truly original, yet perfectly pure.

He will also find his advantage in having obtained a guide in the invention of decorations of which, as we shall show, we would have many more in English villas than economy at present allows. Candidus complains, in his Note-Book, that Elizabethan architecture is frequently adopted, because it is easy, with a pair of scissors, to derive a zigzag ornament from a doubled piece of paper. But we would fain hope that none of our professional architects have so far lost sight of the meaning of their art, as to

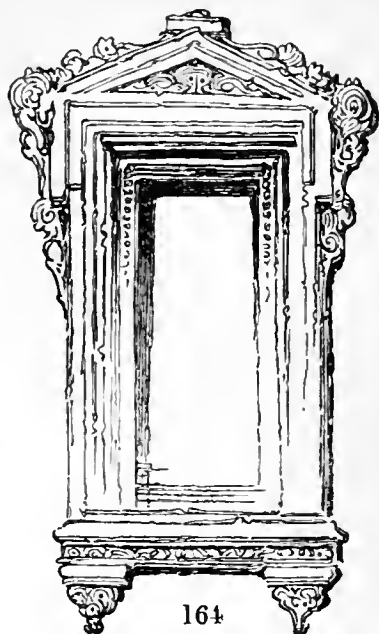
believe that roughening stone mathematically is bestowing decoration, though we are too sternly convinced that they believe mankind to be more shortsighted by at least thirty yards than they are; for they think of nothing but general effect in their ornaments, and lay on their flower-work so carelessly, that a good substantial captain's biscuit, with the small holes left by the penetration of the baker's four fingers, encircling the large one which testifies of the forcible passage of his thumb, would form quite as elegant a rosette as hundreds now perpetuated in stone. Now, there is nothing which requires study so close, or experiment so frequent, as the proper designing of ornament. For its use and position some definite rules may be given; but, when the space and position have been determined, the lines of curvature, the breadth, depth, and sharpness of the shadows to be obtained, the junction of the parts of a group, and the general expression, will present questions for the solution of which the study of years will sometimes scarcely be sufficient*; for they depend upon the feeling of the eye and hand, and there is nothing like perfection in decoration, nothing which, in all probability, might not, by farther consideration, be improved. Now, in cases in which the outline and larger masses are determined by situation, the architect will frequently find it necessary to fall back upon his decorations, as the only means of obtaining character; and that which before was an unmeaning lump of jagged freestone, will become a part of expression, an accessory of beautiful design, varied in its form, and delicate in its effect. Then, instead of shrinking from his bits of ornament, as from things which will give him trouble to invent, and will answer no other purpose than that of occupying what would otherwise have looked blank, the designer will view them as an efficient *corps de réserve*, to be brought up when the eye comes to close quarters with the edifice, to maintain and deepen the impression it has previously received. Much more time will be spent in the conception, much more labour in the execution, of such meaning ornament, but both will be well spent, and well rewarded.

Perhaps our meaning may be made more clear by *fig. 164.*, which is that of a window found in a domestic building of mixed and corrupt architecture, at Munich (which we give now, because we shall have occasion to allude to it hereafter). Its absurd breadth of moulding, so disproportionate to its cornice, renders it excessively ugly, but capable of great variety of effect. It forms one of a range of four, turning an angle, whose mould-

* For example, we would allow one of the modern builders of Gothic chapels a month of invention, and a botanic garden to work from, with perfect certainty that he would not, at the expiration of the time, be able to present us with one design of leafage equal in beauty to hundreds we could point out in the capitals and niches of Melrose and Roslin.

ings join each other, their double breadth being the whole separation of the apertures, which are something more than double squares. Now, by alteration of the decoration, and depth of shadow, we have *figs.* 165. and 166. These three windows differ entirely in their feeling and manner, and are broad examples of such distinctions of style as might be adopted severally in the habitations of the man of imagination, the man of intellect, and the man of feeling. If our alterations have been properly made, there will be no difficulty in distinguishing between their expressions, which we shall therefore leave to con-

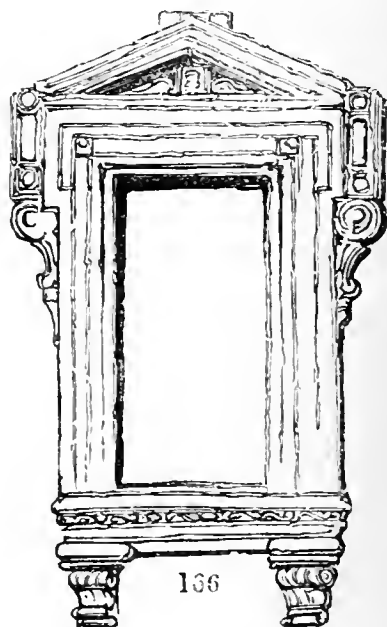
jecture. The character of *fig.* 164. depends upon the softness with which the light is caught upon its ornaments, which should not have a single hard line in them; and on the gradual, unequal, but intense, depth of its shadows. *Fig.* 165. should have all its forms undefined, and passing into one another, the touches of the



164



165



166

chisel light, a grotesque face or feature occurring in parts, the shadows pale, but broad *; and the boldest part of the carving

* It is too much the custom to consider a design as composed of a certain number of hard lines, instead of a certain number of shadows of various depth

kept in shadow rather than light. The third should be hard in its lines, strong in its shades, and quiet in its ornament.

These hints will be sufficient to explain our meaning, and we have not space to do more, as the object of these papers is rather to observe than to advise. Besides, in questions of expression so intricate, it is almost impossible to advance fixed principles; every mind will have perceptions of its own, which will guide its speculations, every hand, and eye, and peculiar feeling, varying even from year to year. We have only started the subject of correspondence with individual character, because we think that imaginative minds might take up the idea with some success, as furnishing them with a guide in the variation of their designs, more certain than mere experiment on unmeaning forms, or than ringing indiscriminate changes on component parts of established beauty. To the reverie, rather than the investigation, to the dream, rather than the deliberation, of the architect, we recommend it, as a branch of art in which instinct will do more than precept, and inspiration than technicality. The correspondence of our villa architecture with our natural scenery may be determined with far greater accuracy, and will require careful investigation.

We had hoped to have concluded the Villa in this paper; but the importance of domestic architecture at the present day, when people want houses more than fortresses, safes more than keeps, and sculleries more than dungeons, is sufficient apology for delay. — *Oxford, August, 1838.*

ART. II. *Candidus's Note-Book.*

Fasciculus XIII.

“Sicut meus est mos,
Nescio quid meditans nugarum; et totus in illis.”

I. IN the pamphlet entitled *What Style* (which, by the by, is in so very rigmarolish a style itself, that the greater part of it is quite unintelligible), Archilochus has one or two sensible remarks. Perhaps, therefore, I shall do both him and others a service, by rescuing the following observations from the oblivion to which his publication seems doomed. “The use made of the knowledge acquired of Grecian architecture derived from

and dimension. Though these shadows change their position in the course of the day, they are relatively always the same. They have most variety under a strong light without sun, most expression with the sun. A little observation of the infinite variety of shade which the sun is capable of casting, as it touches projections of different curve and character, will enable the designer to be certain of his effects. We shall have occasion to allude to this subject again.

the works of Stuart, the Society of Dilettanti, and others, during the last century, has been to substitute its bald and meagre parts for the bold parts of Roman architecture, as practised by Inigo Jones, Wren, and Burlington; later architects being unable to comprehend why that which pleases cut with sharp angles in white marble, seen under a clear light and the influence of early associations, should not do so in a mock building, cut with blunt angles in Portland or Bath stone, under a London light. An architect, by adopting this style, and by dilating on simplicity, *relieves himself from the labour of design*, and a *multiplicity of drawings*; for his employers rarely are able to distinguish this indispensable quality, which means a just adaptation of one part to another, from simpleness or plainness and meagre mannerism. A portico with a pediment over it for a middle, and rows of columns on shelves (?) for wings, neither suited for shelter nor shade, holes for windows and doors, and, perhaps, slices of pilasters, whose capitals are in discord with those of the columns, and whose entablatures and columns are in different dialects, compose the principal fronts of London Grecian architecture, *in the best of which there is less labour of design and thought than in any one of the compartments of St. Paul's Cathedral!*" This is, for the most part, very true; yet the reproach conveyed in it falls not so much upon Grecian architecture itself, as on the dull and insipid routine we have established for copying it. More regard is paid to exactness of the individual members than to the spirit of the whole; nor is it attempted to make up for what is unavoidably lost, by striving to obtain effect by other means. Thus, while we are most superstitiously scrupulous in copying the columns of some one particular example, we make no scruple nor ceremony at all of omitting what was certainly not least important in regard to general character and effect; namely, the sculpture on the frieze and within the pediment. Hence, what was originally a rich entablature becomes, all above the architrave, a naked mass, totally at variance with the enriched columns. The cornice, which, taken in combination with the frieze, seemed to protect and give relief to the sculptures, seldom looks better than a meagre shelf, being in itself quite insufficient to serve as an ornamental finish to the whole, when the enrichments belonging to the frieze are expunged. A very disagreeable *hiatus* in the embellishment is thus occasioned; therefore, if sculpture cannot be obtained, on account of its expensiveness, something at least ought to be done to reconcile the entablature with the columns; and it might be easily effected by rendering the cornice itself more important and ornamental; or, should regard to economy forbid even that, the alternative would be to make the columns themselves as plain as the entablature.

II. I wonder if Mr. Parsey has one rule for the exteriors of

buildings, and another for interiors; or whether he applies his doctrine of vanishing perpendiculars to both? Suppose the subject to be a very lofty room — a hall, or church; would he, in such case, represent the end facing the spectator narrower at top than at bottom, and the sides, consequently, as leaning forwards and overhanging their base? But that which most of all puzzles me is, how Parsey can delude himself into the idea of his theory's being recognised by any one except himself; for do not those very persons who seem disposed to admit it, one and all agree in treating it as absolutely chimerical with regard to practice? Has he yet made a single convert? — one who assents to his doctrine, not merely verbally, but really, truly, and cordially, by availing himself of Mr. Parsey's vaunted discovery? Certainly not; and this says every thing against it: for it avails little that he tries to pass it off as a valuable discovery, when the very persons who seem to support him speculatively, proclaim one and all, by their refusing to adopt it further than speculatively, that it is utterly valueless, not only of no use, but of positive disservice.

III. It may be a mere prejudice, but I must confess that I have a dislike to framed and glazed prints, however excellent they may be as engravings. As a substitute for pictures, they appear to me anything but ornamental to a room. What are termed furniture prints are to me an abomination; as embellishments, they have a most paltry look; and, as specimens of art, are generally most paltry in themselves. For my own part, I should almost as soon think of hanging up a specimen of penmanship or typography as one of chalcography. For such things the portfolio is the proper receptacle. What are termed *furniture prints* are, indeed, almost without exception, such things as no man would admit into a portfolio; but that becomes a *raison de plus* for putting them out of sight altogether. And, now I am upon this subject, I would fain ask what becomes of the cartloads of trash that are paraded from time to time at the printshop windows? Is it possible that those who can afford to lay out their money, purchase such things; or that those to whose taste they appear to be adapted can find money to lay out upon them?

IV. It is singular, or, perhaps, I ought to say, it appears strange to myself, that so little should have been done towards explaining those terms of architecture we possess, and filling up their deficiencies by forming others analogically, the want of which must have been felt by every one who has had occasion to describe a building fully and clearly. I have hitherto sought in vain in technologies of architecture for the term *velum*, which is employed by Woods to express a pendentive cupola over a square plan, and, consequently, intersected at its base by four

planes, forming as many arches. It is an exceedingly convenient and a sufficiently expressive one, and also of obvious etymology ; such dome resembling, in fact, an awning or velum stretched over four arch-headed walls. Where Woods picked it up, I know not ; a confession, that, perhaps, says very little for my reading or my research. Britton has omitted it in his *Dictionary*.

V. The hall, or principal office, at the London and Westminster Bank, a square of about 36 ft., is covered by a *velum*, or pendentive dome, of the above description, with a smaller dome of singularly elegant design. The effect of this apartment is exceedingly striking : with scarcely anything of decoration, it is full of expression and character. There is something in it that may almost be termed poetic, or as a German would express it, *genial*. It is full of variety, yet perfectly simple. Contrary to what we observe in the greater part of modern buildings, very little seems to have been aimed at ; yet a very great deal has been accomplished. Whether I beheld it to advantage, or disadvantage, by seeing it in a rather unfinished state, time must discover. There are, however, one or two things in it which criticism may attack ; for instance, the balustrades cutting the upper part of the shafts of the columns supporting the three arches on the east and west sides : but these are trifling blemishes, that weigh as nothing against the fascination of the *ensemble*.

VI. The very best perspective view can convey but an imperfect idea of a building, or an apartment in one. In the latter case it is like only looking into a room from the door, without being allowed to advance a step further. Let us suppose that a person is permitted only to stand at the door of the King's Library in the British Museum : from that point he would be able to obtain an idea of the spaciousness of the room, and of its general arrangement and style of decoration ; but there would be a great deal that he could make out very imperfectly, and which he must supply, as well as he could, by conjecture. In regard to effect, he would be able to judge only from that attending one particular appearance ; whereas, in order to understand the value of an architectural design, either internal or external, it is requisite to be acquainted with the various appearances it presents as viewed in different directions, and to feel the impressions made on the eye and the imagination, as these appearances shift themselves and change from one to another. The utmost a drawing can accomplish is, to set before us the very best appearance, that which shall be the most striking and effective, among all that can be selected of the subject. But this, again, will sometimes be precisely that which is least of all calculated to explain the actual plan and nature of the design. In such cases, therefore, a single view goes but a very little way towards affording us satisfactory information, however satisfactory it may be considered as a picture.

ART. III. *Some Account of the Girard College for Orphans, now erecting at Philadelphia, from the Designs and under the Superintendence of Thomas U. Walter, Architect.* Drawn up from Materials printed and published in Philadelphia, and from the verbal Communications of Mr. Walter.

BEFORE giving a short description of this college, a general view of which is shown in *fig. 167.*, it will not be out of place, we think, to give a short account of the founder, and an extract from his will.

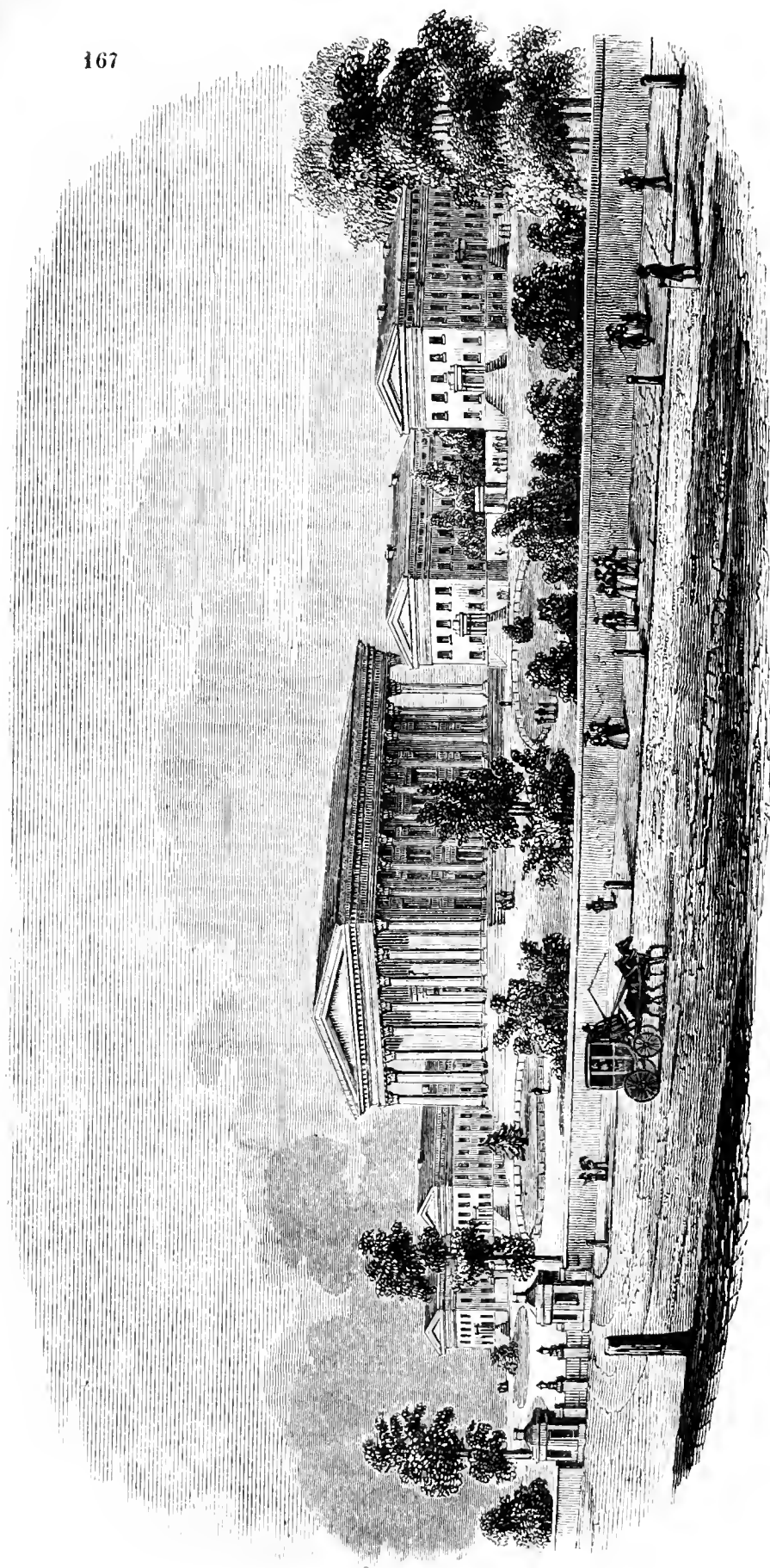
BIOGRAPHICAL SKETCH OF STEPHEN GIRARD.

"STEPHEN GIRARD was born at Bordeaux, in France, in or about the year 1746. Little is known of the early period of his life; and his education is supposed to have been scanty and deficient; whether owing to the neglect of his parents, or the natural waywardness of youth, cannot now be known. A spirit of enterprise, a love of adventure, and a thirst of new scenes and untried situations, very early distinguished him; and, no doubt, as early impelled him to leave his native land, for foreign climes, and novel modes of existence. It has been said, but with what truth we are not now enabled to state, that parental oppression embittered the shelter of his domestic roof, and inspired him with the first thought of emigration; but it is so easy for the high temperament of youth to fancy that severe which is only just, and to plead the tyranny of parents in justification of their own want of filial piety, that we are bound, on all occasions, to listen to such narratives as the usual figments of the young, who are naturally disposed to embellish every thing with the tints of romance; and let fancy riot, where facts are obscured from their knowledge. It is most likely, taking into consideration the peculiar structure of the mind of Stephen Girard, that he was impelled by the natural enterprise of his vigorous spirit to quit the parental roof, and to launch himself at once into the boundless ocean of life, to taste its bitterest waters, or reach in safety its most secure harbour.

"At the age of twelve or fourteen, he is supposed to have left Bordeaux, in the capacity of a *cabin boy*, in a vessel bound to some port in the West Indies; where he is supposed to have remained, trading in that station, between the different islands, and to the United States, until he attained to the situation of mate; in which capacity he first arrived in this country, at the port of New York. How long he remained in that city, we are not informed. His arrival at New York was probably about the year 1775. From New York he removed into New Jersey, and was for some time settled at Mount Holly, when the American army was stationed in that vicinity. He here kept a small store, and manufactured cigars; a trade that he had probably acquired in some of the West India Islands. Mr. Girard settled in Philadelphia about the year 1779. In 1783, he inhabited a small frame tenement on the site of that elegant brick mansion in which he died; to which were annexed a range of two-storied wooden stores. At this period, his commerce was confined to *old iron and old rigging*. He then had no ship or vessel of any description. He was a poor man: obscure, little known, and less noticed.

"Mr. Girard, like all men of wealth, commenced the world with 'small beginnings.' At first a cabin boy; then mate of a small schooner; afterwards a shop keeper, selling cigars and groceries; then keeper of a small tavern, or store, in Water Street, Philadelphia, where he bottled claret, and continued his manufacture of cigars; Stephen Girard successively rose to the rank of the first merchant, and the most opulent banker, in the country; stimulated by never-tiring industry, and unremitting in his efforts to attain an independency. Though long poor, and unsuccessful in trade,

167



his motto, 'industry and frugality,' at last triumphed. With Mr. Girard, business was a passion; and, like all who devote themselves with enthusiasm to any pursuit, and who are gifted with genius for their profession, he finally succeeded in realising a fortune, without example in the history of trade, when the forlorn and destitute condition of his early life is taken into consideration. By what degrees he increased his property, cannot yet be known, and is not material to our proper estimation of his character. 'By their fruits ye shall know them.' Mr. Girard realised his millions from commerce; and his nights, as well as days, were devoted to the sorcery of the 'Water Witch.' At the time of his demise, his fortune is estimated to have amounted to the sum of from twelve to fifteen millions of dollars.

"Mr. Girard has left several relations, who reside in Bordeaux and this city. His brother and sister are still living in the former place; and he has two very accomplished nieces married in Philadelphia; one to John Hemphill, Esq., and another to Dr. J. Y. Clark: both gentlemen of opulence and respectability. A third niece, also, resides with Mrs. Clark, extremely amiable, and very accomplished. He is also said to have left several nephews, whose education he was careful to promote.

"No man has been more remarkable for his active personal philanthropy than Mr. Girard; especially amidst those horrid scenes of devastating pestilence that depopulated and scourged our city, under the name of yellow fever. In 1793, more particularly, Mr. Girard was eminently distinguished for his active exertions in ministering to the sick, and devising plans for the prevention and restriction of contagion. In this laudable, but perilous and appalling, work Mr. Girard had but few colleagues; and of those few, but one now survives, in the person of Matthew Carey, Esq., alike distinguished for his usefulness, and who has paid a just tribute of applause to the exemplary labours of Mr. Girard in that eventful crisis.

"Perhaps the first business Mr. Girard engaged in, upon his coming to Philadelphia, was that of an *aquatic pedlar*, up and down the borders of the Delaware, as far as Trenton; supplying the neighbouring farmers with groceries and ready-made clothing, for money or produce. This trade he prosecuted in a small sail-boat, returning every fortnight or three weeks for a fresh supply. The acquaintances he had contracted with the farmers whilst keeping store at Mount Holly had, no doubt, suggested, as it afterwards facilitated, this exchange of products.

"It was long before Mr. Girard grew rich; for no man accumulates immense wealth by sudden means. Industry is tardy and progressive in her gains; and even speculation, when most favourable, is counterbalanced by adverse chances, that often subtract from the harvest of good fortune. Mr. Girard was occupied in commerce when it made fortunes for all its votaries; but, when the 'Water Witch' turned her smiles from trade, he wisely directed the greater portion of his immense capital into other and more secure, but less profitable, channels; and thus continued to reap a moderate but certain harvest, at a time when others were losing even their seed-grain.

"Immediately prior to the expiration of the charter of the old bank of the United States, in 1810 and 1811, Mr. Girard, upon consultation with George Simpson, Esq., who calculated on the renewal of the charter, had instructed the Messrs. Baring of London to purchase for him a large amount of the stock of the Bank of the United States; which they accordingly did, to the net value of one million eight hundred thousand dollars, under the expectation of the renewal of the charter, and a consequent realisation of immense profits. Disappointed in this object, he determined to establish a *private bank*, under the superintendence of the late George Simpson, the cashier of that institution, to whom he chiefly confided its transactions; contenting himself with the mere approval of its discounting transactions. This was in 1812, since which the capital of the bank has augmented to five millions.

"A more useful and liberal application of this surplus capital, to the wants of the mercantile community, at that peculiar crisis, and at the common rate

of interest, could not well have been imagined. His bank, conducted on liberal principles, realised profit to himself, and immense facilities to the public. The capital of the old bank of the United States had then just been abstracted from circulation; and Mr. Girard's two millions went far to arrest bankruptcies, ease the money market, and restore public confidence and credit to their wonted elasticity.

"Mr. Girard became a very heavy subscriber to the present bank of the United States; in the management of which he was for many years active and efficient; always on the side of sound principles, and firmly opposed to its measures during the era of the speculation in its stock. At the time of its institution, he had government deposits to the amount of one million in his bank, which was paid into the vaults of the new institution with great rapidity, and so efficiently in the form of specie, as to contribute essentially to the restoration of the currency to its ancient metallic soundness. In a very short time, he brought the Bank of the United States into his debt, and, with few exceptions, ever after kept it so. Few of the monied institutions of the country could have accomplished as much as this opulent banker to aid the government in producing the resumption of specie payments.

"Although opposed to the system of *speculation* in the stock of the Bank of the United States, Mr. Girard could not fail to profit by the public delirium that it had excited. By the stock he sold out at that period, he gained a clear half million of dollars, when it commanded 150 to 160 advance; still retaining a share in the stock greater than that of any other individual in the country.

"The loan of five millions was taken by Mr. Girard, of the government, in the darkest hour of the last war, and when trembling at the brink, or rather floundering in the gulf, of bankruptcy and discredit. The temptation of great profit was certainly powerful, to receive 100 seven per cent stock for 70! But, on the other hand, the risk of loss appeared great; public credit had expired, and the hopes of the stoutest hearts began to wither. It was an hour that 'tried men's souls,' and locked up the capital of the country in the vaults of fear and suspicion. Great as was the temptation of profit, few were found willing to put their capital in jeopardy, under the frowning aspect of the times; when the Union was hanging by a single hair, and the country every day falling into the hands of the enemy.

"The habits of Mr. Girard were exclusively those of the man of business. He had no pleasures, but in the performance of active duties: always to be found busy in his counting-room, or bustling on his farm, for he was also fond of agriculture; feeding his own cattle, curing his own beef, and even bestowing his attention on the culture of a vegetable garden, the produce of which he caused to be taken to market. His fruits and his flowers were also of the most choice kind. But in his hands (for his was the touch of Midas) every thing was turned into gold; and fruits, flowers, vegetables, ships, houses, lots, bank, and all, contributed, in the end, to pour millions in his lap. Like all men of immense wealth, it was his peculiar delight, to cast his eyes over the aggregate of his millions. But he took most pleasure in adding house to house, lot to lot, until he could count his squares of buildings, and found it impossible to count the number of his deeds, parchments, and warrants. To the Schuylkill Navigation Company he was an efficient friend in the hour of need, as well as to the Chesapeake Canal Company, and other public works of vast importance and lasting utility. In the arduous struggle of the Bank of the United States to resume specie payments, Mr. Girard, under the counsels and influence of his cashier, Mr. Simpson, was essentially instrumental in producing that result, as well as interposing his voice to reclaim the bank from the gulf of speculation, and place it on a proper basis; for which he offered to the Bank of the United States all his capital, specie, &c., if they would appoint George Simpson cashier, and conduct it on his legitimate principles.

"Mr. Girard has no children to mourn his demise; but the whole com-

munity will feel his sudden departure, and our city long have cause to deplore his exit to the world of spirits !

" In one sense, and in the best sense, Mr. Girard may be justly called a public benefactor ; not less for the public improvements he projected and accomplished during his lifetime, which were unequalled by those of any other individual, than for the beneficent public objects for which he has bequeathed the chief part of his fortune. Even at the time of his death, his operations as a merchant were very extensive ; and the commerce of Philadelphia will long deplore the abstraction of his capital from its business.

" The great public benefactions made by the will of Stephen Girard, which we here annex, and which cannot fail to excite the interest and curiosity of every rational mind, proclaim him as one of the first philanthropists of the age ; and, however individual selfishness among his friends or his kinsmen might regret the direction his immense fortune has taken, but which we believe is not the case, yet an enlightened benevolence will rejoice that his great wealth has been devised, with unparalleled patriotism and public spirit, for the benefit of the community, and not the gratification of private passions or individual avarice.

" His liberal endowments for the purposes of education would alone shed lustre on his name, and insure him an immortality in the hearts of all future generations. To enlighten the mind of the people, is to improve their virtue and extend their usefulness, not less than their happiness, comfort, and freedom.

" Mr. Girard's understanding, in point of intellectual power, was certainly one of the first order. He thought much, and thought profoundly ; but, as is often the case with the strongest minds, his train of reflection was frequently apt to describe an eccentric orbit. Yet in the ordinary affairs of business, he was, for that very reason, more correct, or, if you please, more fortunate, than the regular right-angled speculators of the day. His principal trait of mind was anticipation. He had digested topics, when others were only beginning to think of them ; and the common observer was often astonished to find that what he thought he was communicating as news to Mr. Girard, was a matter quite familiar to him ; and that, on the strength of it, he was already employed in loading a ship, or prosecuting a speculation.

" Mr. Girard, in his person, was of stout frame, about 5 ft. 6 in. in height. His manners were plain ; and in conversation he was taciturn, except on business ; and, being generally engaged by his numerous avocations, he was impatient of all conversation, except what related to his pursuits on hand. In his mode of living, he was plain, simple, and void of ostentation. The routine of high life never had charms to withdraw him from his early habits of simplicity, even in the zenith of his fortune. His recreation was business ; he knew no other pleasure, and labour was to him delight. He was particularly fond of working on his farm, and he outworked all the labourers he employed. At the very close of life, he allowed himself no respite from business, never dreamed of retiring ; but, in the words of our great dramatic poet, adapted to his civil pursuits, he may be said to have ' died with harness on his back.' "

Stephen Girard's Will. — After giving 30,000 dollars to the Pennsylvania Hospital, 20,000 dol. to the Pennsylvania Institution for the Deaf and Dumb, 10,000 dol. to the Orphan Asylum of Philadelphia, 10,000 dol. for the use of the Lancasterian Schools in Philadelphia, 10,000 dol. in trust, safely to invest the same in some productive fund, and with the interest and dividends arising therefrom to purchase fuel between the months of March and August in every year, for ever, and, in the month of January in every year, for ever, distribute the same amongst poor white house-

keepers and roomkeepers, of good character, residing in the city of Philadelphia; 10,000 dol. to the Society for the Relief of poor and distressed Masters of Ships, their Widows and Children, 20,000 dol. to the Grand Lodge of Philadelphia, 60,000 dol. for a school in Passyunk township, and a great many legacies of from 5 to 50,000 dol. to his relations, and to each of the captains who shall be in his employment at the time of his decease, and to each of his servants and apprentices, besides various bequests to the city of New Orleans; he at last comes to the Girard College; and the following extract will show that it was uppermost in his mind: —

“And so far as regards the residue of my personal estate, in trust, as to two millions of dollars, part thereof to apply and expend so much of that sum as may be necessary, in erecting, as soon as practicably may be, in the centre of my square of ground between High and Chestnut Streets, and Eleventh and Twelfth Streets, in the city of Philadelphia (which square of ground I hereby devote for the purposes hereinafter stated, and for no other, for ever), a permanent college, with suitable out-buildings, sufficiently spacious for the residence and accommodation of at least three hundred scholars, and the requisite teachers and other persons necessary in such an institution as I direct to be established; and in supplying the said college and out-buildings with decent and suitable furniture, as well as books and all things needful to carry into effect my general design.

“The said college shall be constructed with the most durable materials, and in the most permanent manner, avoiding needless ornament, and attending chiefly to the strength, convenience, and neatness of the whole. It shall be at least 110 ft. east and west, and 160 ft. north and south, and shall be built on lines parallel with High and Chestnut Streets, and Eleventh and Twelfth Streets, provided those lines shall constitute at their junction right angles. It shall be three stories in height, each story at least 15 ft. high in the clear from the floor to the cornice; it shall be fire-proof inside and outside. The floors and the roof to be formed of solid materials, on arches turned on proper centres, so that no wood may be used, except for doors, windows, and shutters. Cellars shall be made under the whole building, solely for the purposes of the institution; the doors to them from the outside shall be on the east and west of the building, and access to them from the inside shall be had by steps, descending to the cellar floor from each of the entries or halls hereinafter mentioned, and the inside cellar doors to open under the stairs on the north-east and north-west corners of the northern entry, and under the stairs on the south-east and south-west corners of the southern entry; there should be a cellar window under, and in a line with each window in the first story; they should be built one half below, the other half above, the surface of the ground, and the ground outside each window should be supported by stout walls; the sashes should open inside, on hinges, like doors, and there should be strong iron bars outside each window; the windows inside and outside should not be less than 4 ft. wide in the clear. There shall be in each story four rooms, each room not less than 50 ft. square in the clear; the four rooms on each floor to occupy the whole space east and west on such floor or story, and the middle of the building north and south; so that in the north of the building, and in the south thereof, there may remain a space of equal dimensions, for an entry or hall in each, for stairs and landings. In the north-east and in the north-west corners of the northern entry or hall on the first floor, stairs shall be made so as to form a double staircase, which shall be carried up through the several stories; and, in like manner, in the south-east and south-west corners of the southern entry or hall, stairs shall be made, on the first floor, so as to

form a double staircase, to be carried up through the several stories ; the steps of the stairs to be made of smooth white marble, with plain square edges, each step not to exceed 9 in. in the rise, nor to be less than 10 in. in the tread ; the outside and inside foundation walls shall be at least 10 ft. high in the clear from the ground to the ceiling ; the first floor shall be at least 3 ft. above the level of the ground around the building, after that ground shall have been so regulated as that there shall be a gradual descent from the centre to the sides of the square formed by High and Chestnut and Eleventh and Twelfth Streets ; all the outside foundation walls, forming the cellars, shall be 3 ft. 6 in. thick up to the first floor, or as high as may be necessary to fix the centres for the first floor ; and the inside foundation wall, running north and south, and the three inside foundation walls, running east and west (intended to receive the interior walls for the four rooms, each not less than 50 ft. square in the clear, above mentioned), shall be 3 ft. thick up to the first floor, or as high as may be necessary to fix the centres for the first floor ; when carried so far up, the outside walls shall be reduced to 2 ft. in thickness, leaving a recess outside of 1 ft., and inside of 6 in. ; and, when carried so far up, the inside foundation walls shall also be reduced, 6 in. on each side, to the thickness of 2 ft. ; centres shall then be fixed on the various recesses of 6 in. throughout, left for the purpose, the proper arches shall be turned, and the first floor laid ; the outside and the inside walls shall then be carried up of the thickness of 2 ft. throughout, as high as may be necessary to begin the recess intended to fix the centres for the second floor, that is, the floor for the four rooms, each not less than 50 ft. square in the clear, and for the landing in the north, and the landing in the south, of the building, where the stairs are to go up ; at this stage of the work, a chain, composed of bars of inch-square iron, each bar about 10 ft. long, and linked together by hooks formed of the ends of the bars, shall be laid straightly and horizontally along the several walls, and shall be as tightly as possible worked into the centre of them throughout, and shall be secured wherever necessary, especially at all the angles, by iron clamps solidly fastened, so as to prevent cracking or swerving in any part ; centres shall then be laid, the proper arches turned for the second floor and landings, and the second floor and landings shall be laid ; the outside and the inside walls shall then be carried up of the same thickness of 2 ft. throughout, as high as may be necessary to begin in the recess intended to fix the centres for the third floor and landings, and, when so far carried up, another chain, similar in all respects to that used at the second story, shall be in like manner worked into the walls throughout, as tightly as possible, and clamped in the same way with equal care ; centres shall be formed, the proper arches turned, and the third floor and landings shall be laid ; the outside and the inside walls shall then be carried up, of the same thickness of 2 ft. throughout, as high as may be necessary to begin the recess intended to fix the centres for the roof ; and, when so carried up, a third chain, in all respects like those used at the second and third stories, shall, in the manner before described, be worked as tightly as possible into the walls throughout, and shall be clamped with equal care ; centres shall now be fixed in the manner best adapted for the roof, which is to form the ceiling for the third story, the proper arches shall be turned, and the roof shall be laid as nearly horizontally as may be, consistently with the easy passage of water to the eaves ; the outside walls, still of the thickness of 2 ft. throughout, shall then be carried up about 2 ft. above the level of the platform, and shall have marble capping, with a strong and neat iron railing thereon. The outside walls shall be faced with slabs or blocks of marble or granite, not less than 2 ft. thick, and fastened together with clamps securely sunk therein ; they shall be carried up flush from the recess of 1 ft. formed at the first floor, where the foundation outside wall is reduced to 2 ft. The floors and landings, as well as the roof, shall be covered with marble slabs, securely laid in mortar ; the slabs on the roof to be twice as thick as those on the floors. In constructing the walls, as well as in turning

the arches, and laying the floors, landings, and roof, good and strong mortar and grout shall be used, so that no cavity whatever may any where remain. A furnace or furnaces for the generation of heated air shall be placed in the cellar, and the heated air shall be introduced in adequate quantity, wherever wanted, by means of pipes and flues inserted and made for the purpose in the walls, and as those walls shall be constructed."

After a number of other regulations respecting this college, which occupy five or six pages, Mr. Girard's next bequest is 500,000 dol. for paving and otherwise improving the city of Philadelphia; 300,000 dol. to the commonwealth of Pennsylvania; and the residue of his estate for various public purposes. The will is dated Feb. 16. 1830; and the last codicil, June 20. 1831.

The account of the proceedings of laying the corner stone of the Girard College, published in 1833, contains the following address, pronounced on that occasion by Nicholas Biddle, which well merits a place in this Magazine: —

"Fellow-Citizens, We have now witnessed the laying of the corner stone of the Girard College for Orphans. That stone, simple, massive, and enduring, fit emblem of the structure to be reared from it, and of the man whose name it bears, has been deposited in its final resting-place. The earth received it. To-morrow the earth will cover it. Ours are the last eyes which shall look upon it, and hereafter it will lie in its silent repose, unmoved by all the revolutions of the changing world above it.

"And yet from out that depth is to rise the spirit which may more influence the destiny of ourselves and our children, than all else the world now contains. The seed that has been planted is of the tree of knowledge, that growth which gives to existence all that renders it attractive, flowers for our early youth, fruits in maturer life, and shelter for declining years. It is that knowledge, which, trampling down in its progress the dominion of brutal force, and giving to intellect its just ascendancy, has at length become the master power of the world. No people can now be distinguished, or prosperous, or truly great, but by the diffusion of knowledge; and, in the stirring competition of the roused spirits of our time, the first glory and the highest success must be assigned to the best educated nation. If this be true in our relations abroad, it is far more true at home. Our institutions have boldly ventured to place the whole power of the country in the hands of the whole people of the country, freed from all the great restraints, which, in other nations, were deemed necessary. In doing this, their reliance is entirely on the general intelligence and education of the community, without which, such institutions can have neither permanence nor value. Their brilliant success has hitherto justified that confidence; but, as our population becomes concentrated into denser masses, with more excited passions and keener wants, the corrective influence of instruction becomes daily more essential. The education, then, of the people, which elsewhere is desirable or useful, becomes with us essential to the enjoyment, as well as to the safety, of our institutions. Our general equality of rights would be unavailing without the intelligence to understand and to defend them; our general equality of power would be dangerous, if it enabled an ignorant mass to triumph by numerical force over the superior intelligence which it envied; our universal right to political distinction, unless the people are qualified for it by education, becomes a mere abstraction, exciting only an abortive ambition. While, therefore, to be uneducated and ignorant is in other countries a private misfortune, in ours it is a public wrong; and the great object to which statesmen should direct their efforts is, to elevate the

standard of public instruction to the level, the high table land, of our institutions. It is thus that this day has been appropriately chosen for the present solemnity.

“It is fit that, on the anniversary of that day when our ancestors laid the broad foundations of our public liberties, on that day when our countrymen, throughout this prosperous empire, are enjoying the blessings which these institutions confer, we, in our sphere of duty, should commence this great work, so eminently adapted to secure and perpetuate them. This truth no man felt with a deeper conviction than our distinguished fellow-citizen, whose history, and whose design in founding this institution, may aptly occupy, for a few moments, our attention. Of these, now that the tomb has dissipated all the illusions which once surrounded them, we can speak with the impartiality of history; and here, on this chosen spot, the scene of his future fame, we may freely bestow on his memory the homage which his unassuming nature would have shunned while living. We all remember, and most of us knew him. Plain in appearance, simple in manners, frugal in all his habits, his long life was one unbroken succession of intense and untiring industry. Wealthy, yet without indulging in the ordinary luxuries which wealth may procure; a stranger to the social circle, indifferent to political distinction, with no apparent enjoyment, except in impelling and regulating the multiplied occupations of which he was the centre, whose very relaxation was only variety of labour; he passed from youth to manhood, and finally to extreme old age, the same unchanged, unvarying model of judicious and successful enterprise. At length men began to gaze with wonder on this mysterious being, who, without any of the ordinary stimulants to exertion, urged by neither his own wants, nor the wants of others, with riches already beyond the hopes of avarice, yet persevered in this unceasing scheme of accumulation; and, possessing so much, strove to possess more, as anxiously as if he possessed nothing. They did not know that, under this cold exterior, and aloof in that stern solitude of his mind, with all that seeming indifference to the world and to the world’s opinions, he still felt the deepest sympathy for human affliction, and nursed a stronger, yet a far nobler and wiser, ambition to benefit mankind, than ever animated the most devoted follower of that world’s applause. His death first revealed all that this accumulation of his laborious and prolonged existence was to be the inheritance of us and of our children; that, for our and their comfort, the city of his adoption was to be improved and embellished, and, above all, that to their advancement in science and in morals were to be dedicated the fruits of his long years of toil.

“It required the self-denial of no common mind, to resist the temptation of being himself the witness and the administrator of this bounty, and to have abstained from enjoying the applause of his grateful countrymen, who would have acknowledged with affectionate respect the benefits which they derived from him. Yet even this secret and prospective munificence must have had its charm for a mind like his; and we may well imagine that the deep and retired stillness of his spirit was often soothed with the visions of the lasting good, and perhaps, too, of the posthumous glory, which he was preparing. Such contemplations he might well indulge, for to few have they been so fully realised. From the moment that foundation-stone touched the earth, the name of Girard was beyond the reach of oblivion. He has now taken his rank among the great benefactors of mankind. From this hour, that name is destined to survive to the latest posterity; and, while letters and the arts exist, he will be cited, as the man who, with a generous spirit, and a sagacious foresight, bequeathed, for the improvement of his fellow-men, the accumulated earnings of his life. He will be remembered in all future times by the emphatic title with which he chose to be designated, and with which he commences his will; a title by which we ourselves may proudly recognise him, as ‘Stephen Girard, of the city of Philadelphia, in the commonwealth of Pennsylvania, merchant and mariner;’ the author of a more munificent act of enlightened charity than was ever performed by any other human being.

“ His will indeed be the most durable basis of all human distinction, a wise benevolence in the cause of letters. The ordinary charity, which feeds or clothes the distressed, estimable as it is, relieves only the physical wants of the sufferer. But the enlightened beneficence, which looks deeper into the wants of our nature; which not merely prolongs existence, but renders that existence a blessing, by pouring into these recesses of sorrow the radiance of moral and intellectual cultivation; this it is which forms the world’s truest benefactor, and confers the most enduring of all glory; a glory the more secure, because the very objects of that benevolence are enabled to repay with fame the kindness which sustains them.

“ It is not unreasonable to conjecture that, in all future times, there will probably be in existence many thousand men who will owe to Girard the greatest of all blessings, a virtuous education; men who will have been rescued from want, and perhaps from vice, and armed with power to rise to wealth and distinction. Among them will be found some of our best-educated citizens, accomplished scholars, intelligent mechanics, distinguished artists, and prominent statesmen. In the midst of their prosperity, such men can never forget the source of it, nor will they ever cease to mingle with their prayers, and to commemorate with their labours, the name of their great benefactor. What human being can be insensible to the happiness of having caused such a succession of good through remote ages, or not feel that such applause is more grateful than all the shouts which ever rose from the bloodiest field of battle, and worth all the vulgar fame of a hundred conquests!

“ The general design, and the resources, of the institution are proportioned to its purposes, and characteristic of him who did nothing which he did not do well. After the building shall have been completed, there will remain the annual income of two millions of dollars, now yielding one hundred and two thousand dollars; and, if these funds should be inadequate for all the orphans applying for admission, the income of nearly all the remainder of the estate is to be appropriated to the erection of as many new buildings as his square in the city would have contained. So that, in general, it may be stated with reasonable confidence, that, when all the buildings are ready for the reception of the pupils, there will be available for the maintenance of the institution an income of not less than one hundred thousand dollars, which may be increased to at least two hundred and twenty thousand dollars. These ample funds are to be devoted to the maintenance and education of ‘poor male white orphan children.’ Of all the classes of human indigence, there are none more helpless, and none more entitled to our sympathies, than these children of misfortune. They have lost their natural protectors. The arms which have hitherto embraced and sustained them have been folded in death. They began life in comfort, perhaps in affluence; but now they stand alone, abandoned, and helpless, to struggle against the world’s coldness, with precarious means of subsistence, with no prospect of instruction, and treading on that narrow and slippery verge which too often separates want from crime. From this friendless condition they are rescued by the benevolence of Girard, who not merely provides the means of subsistence, but, redressing the wrongs of fortune, raises them at once in the scale of being, and qualifies them to be useful members of that society which they would otherwise disturb or corrupt.

“ How wide the limits of that benevolence may be, it is impossible to conjecture. If the imperfection of language suggests a doubt as to the degree of destitution which makes an ‘orphan,’ the greater weakness of our nature forces upon us the melancholy enquiry, What child is there who may not be a poor orphan? Who is there, indeed, among us whose children may not yet need the blessings of this institution? Let none of us, in the confidence of prosperity, deem his own offspring secure. Alas! all our prosperity is so vain and shadowy, and misfortune is so constantly in ambush to assail us, that it were presumptuous in any of us to suppose himself beyond the reach of vicissitudes, which would render such an institution the happiest refuge for his children. Yes, fellow-citizens, this college is our own, the property of us

all. It is intended to remedy misfortunes to which we are all equally liable. And it should be a source of great consolation to each of us, that if, in the ever-varying turns of human life, misfortune should overtake, and death surprise us, they who bear our names, and are destined to be the fathers of our descendants, will here find a home where they may be prepared for future usefulness, and become in turn the protectors and support of their more helpless relatives.

"Hereafter, thanks to the bounty of Girard, every father among us may, on his death-bed, enjoy the reflection, that, although unprovided with fortune, there is secured to his sons that which is at once the means of fortune, and far better than the amplest fortune without it, a good education. This consideration, if any such incentive were wanting, may serve to stimulate the sense of public duty in those who administer the institution, to render it worthy of their own children. For this purpose, happily, it is only necessary to fulfil the design of the founder, which provides ample means, and expressly enjoins the employment of them, to give every kind of liberal and useful instruction.

"They would much err, who, comparing this institution with any ordinary standard, regard it as an almshouse, or a poorhouse, in which a certain number of pauper boys, housed together, to be kept from harm, are to receive some hasty rudiments of instruction, and then to be thrust out on the world to make way for a similar swarm of unfortunate children. By no means. The comprehensive benevolence of Girard looked to higher and better things. It is not a poor school, nor a charity school, nor a free school, in their ordinary acceptation. It is, as he denominates it, a 'college.' The peremptory prohibition, that 'no distinctive dress should ever be worn,' reveals his purpose that these youths shall not be designated as objects of remark or contempt by their contemporaries; that they shall be distinguished only by their conduct, and shall not wear the livery even of charity. The instruction, too, required, is of the highest character, embracing almost every thing worthy of being studied in the circle of human knowledge. 'They shall be instructed,' says he, 'in the various branches of a sound education; comprehending reading, writing, grammar, arithmetic, geography, navigation, surveying, practical mathematics, astronomy, natural, chemical, and experimental philosophy, the French and Spanish languages (I do not forbid, but I do not recommend the Greek and Latin languages), and such other learning and science as the capacities of the several scholars may merit or warrant.' This excludes nothing; nay, it embraces every thing necessary to form a well-educated man. How far this instruction is to be carried; whether, when the degrees of talent and disposition come to be analysed, some are to be instructed up to the point of their appropriate capacity, while the more intelligent and more diligent are to be carried into the higher regions of science; are questions of future administrations, to be decided by experience. But it is manifest that all the means of education, thorough, perfect education, are to be provided; that every facility for the acquisition of knowledge should be at hand; nor is there any reason why the Girard College, liberally endowed beyond all example, should not be superior to any existing establishment in the talents of its professors, or the abundance of its means of instruction; and, with the blessing of God, so it shall be. There shall be collected within these walls all that the knowledge and research of men have accumulated to enlighten and improve the minds of youth. It will be the civil West Point of this country, where all the sciences which minister to men's happiness, and all the arts of peace, may be thoroughly and practically taught. Its success will naturally render it the model for other institutions; the centre of all improvement in things taught, no less than in the art teaching them; the nursery of instructors as well as pupils; thus not merely accomplishing the direct benefit of those to whom its instruction extends, but irradiating by its example the whole circumference of human knowledge.

"To this intellectual cultivation will be added that, without which all instruction is valueless, and all learning the mere ability for evil, that moral discipline which makes men virtuous and happy at their own firesides. 'My

desire is,' says he, 'that all the instructors and teachers in the college shall take pains to instil into the minds of the scholars the pure principles of morality, so that, on their entrance into active life, they may, from inclination and habit, evince benevolence towards their fellow-creatures, and a love of truth, sobriety, and industry.' When this harmony between the heart and the understanding ceases, mere knowledge is a curse, and men become intellectual statues, with the perfect forms of manly exterior, but cold and selfish, and worthless to the community which endures them. Our youth, too, will not fail to be deeply imbued with that enthusiastic devotion to republican government, and that knowledge of his public rights and duties, which should form the basis of the American character. It is thus that the founder strictly enjoins 'that, by every proper means, a pure attachment to our republican institutions, and to the sacred rights of conscience, as guaranteed by our happy constitution, shall be formed and fostered in the minds of the scholars.'

"Nor need there be any dread that such an education will disqualify them for their pursuits in after-life. In this country all pursuits are open to all men, nor should the humblest citizen despair of the highest honours of the republic. They err who suppose that, because men are instructed, they may desert the ordinary walks of employment. There never can be such an over-education of the mass of the people. Men labour not for want of knowledge, but for want of bread. The cultivation of the mind, like the cultivation of the soil, only renders it more productive; and knowledge becomes the best auxiliary to industry, by rendering the labourer more intelligent and more ambitious to excel. The youths thus instructed will go forth into the various pursuits of life, many of which are in their nature mechanical; but they will begin with the disposition and the power not merely to excel in them, but to rise beyond them; and they will emerge from their workshops, as their countrymen, Franklin, and Rittenhouse, and Godfrey, and Fulton, did before them, reaching all the distinctions of the state which may be honourably won by talents and character.

"That the scene of so many blessings may be appropriate to them, it is intended to make this structure worthy of its great object; worthy of the name of its founder, and of the city which he was so anxious to embellish. Among the sciences most needed in this country, where individual wealth is hastening to indulge its taste, and where every state, and city, and county, requires extensive public buildings, is architecture. Indispensable in the rudest forms of life, it becomes the highest ornament of the most enlightened. In every stage of its progress, the style of its public works displays the character of the nation which rears them. Disproportioned and grotesque among a coarse and unlettered people, in nations more advanced, often over-ornamented with the gaudy profusion and the caprices of tasteless wealth, it is only when sustained by the public spirit of a community at once enlightened and generous, that architecture attains its highest glory, a refined simplicity. Of that perfection it is proposed that this structure shall present a model, the equal at least of similar works in any other country, and not unworthy of the best days of antiquity; a structure which will at once gratify the honourable pride of every citizen of the United States, and form the best study for all the branches of industry connected with architecture. The enjoyment of so many advantages devolves on us, fellow-citizens, the duty of great care and vigilance to preserve them. After bestowing upon our city this rich inheritance, Girard adds this emphatic declaration:—'In relation to the organisation of the college and its appendages, I leave, necessarily, many details to the mayor, aldermen, and citizens of Philadelphia; and I do so with the more confidence, as, from the nature of my bequests, and the benefit to result from them, I trust that my fellow-citizens of Philadelphia will observe and evince special care and anxiety in selecting members for their city councils, and other agents.'

"That the generous confidence with which he has thus committed to us the execution of his great designs should never be betrayed, we owe equally to the name of the founder, and to the interests of our posterity; as the whole value of this institution will depend entirely on the administration of it. For

myself and my colleagues, to whom the high honour has been assigned of sharing in that administration, I can only say, fellow-citizens, that we have assumed the trust with the deepest sense of its responsibility, and a determination to execute it in the spirit of enlightened benevolence which animated the founder; and we shall in our turn retire from it, with the hope that our fair city may always find successors, who, to equal zeal, add greater ability to serve it. Under such auspices, we confidently trust that all the expectations of the founder will be realised. With this delightful anticipation, we now invoke the blessing of God on this great undertaking.

"In the name of Stephen Girard, of the city of Philadelphia, in the commonwealth of Pennsylvania, merchant and mariner, we lay the foundation of this Girard College for Orphans. We dedicate it to the cause of charity, which not only feeds and clothes the destitute, but wisely confers the greatest blessings on the greatest sufferers; to the cause of education, which gives to human life its chief value; to the cause of morals, without which knowledge were worse than unavailing; and, finally, to the cause of our country, whose service is the noblest object to which knowledge and morals can be devoted.

"Long may this structure stand, in its majestic simplicity, the pride and admiration of our latest posterity; long may it continue to yield its annual harvests of educated and moral citizens, to adorn and to defend our country. Long may each successive age enjoy its still increasing benefits, when time shall have filled its halls with the memory of the mighty dead who have been reared within them, and shed over its outward beauty the mellowing hues of a thousand years of renown."

"Description of the main Building of the Girard College for Orphans. Thomas U. Walter, Architect.

"The Girard College is situated about one mile and a half north-west of the centre of the city, on a tract of land containing forty-five acres; the whole of which was appropriated by Mr. Girard exclusively to the purposes of the institution.

"The main building, which is the subject of this description, is composed in the Corinthian order of Grecian architecture: it covers a space of 184 ft. by 243 ft., and consists of an octastyle peripteral superstructure, resting upon a basement of 8 ft. in height, composed entirely of steps extending around the whole edifice; by which a pyramidal appearance is given to the substruction, and a means of approach to the porticoes afforded from every side. The dimensions of the stylobate (or platform on which the columns stand) are, 159 ft. on the fronts, by 217 ft. on the flanks; and the cell, or body of the building, measures 111 ft. by 169 ft. 2 in. The whole height, from the ground to the apex of the roof, is 100 ft.

"The columns are thirty-four in number; the diameter of the shaft at the top of the base is 6 ft., and at the bottom of the capital 5 ft.; the height of the capital is 8 ft. 6 in., and its width, from the extreme corners of the abacus, 9 ft.; the whole height of the column, including capital and base, is 55 ft. The entablature is 16 ft. 3 in. high, and the greatest projection of the cornice, from the face of the frieze, is 4 ft. 9 in.; the elevation of the pediment is 20 ft. 5 in., being one ninth of the span. The capitals of the columns are proportioned from those of the monument of Lysicrates at Athens: they are divided in height into four courses; the first embraces the water leaf, and consists of a single stone of 17 in. in thickness; the second course is also composed of a single stone, the height of which is 2 ft. 10 in. (the annular row of acanthus leaves occupies the whole of this course); the third division of the capital embraces the volutes and cauliculi (this course, which is likewise 2 ft. 10 in. in height, is composed of two pieces, having the vertical joint between the cauliculi on two opposite faces); the fourth, or upper, course, being the abacus, is 1 ft. 5 in. in height. The ceiling of the portico will be formed by beams resting on the tenia, and extending from the cell of the building

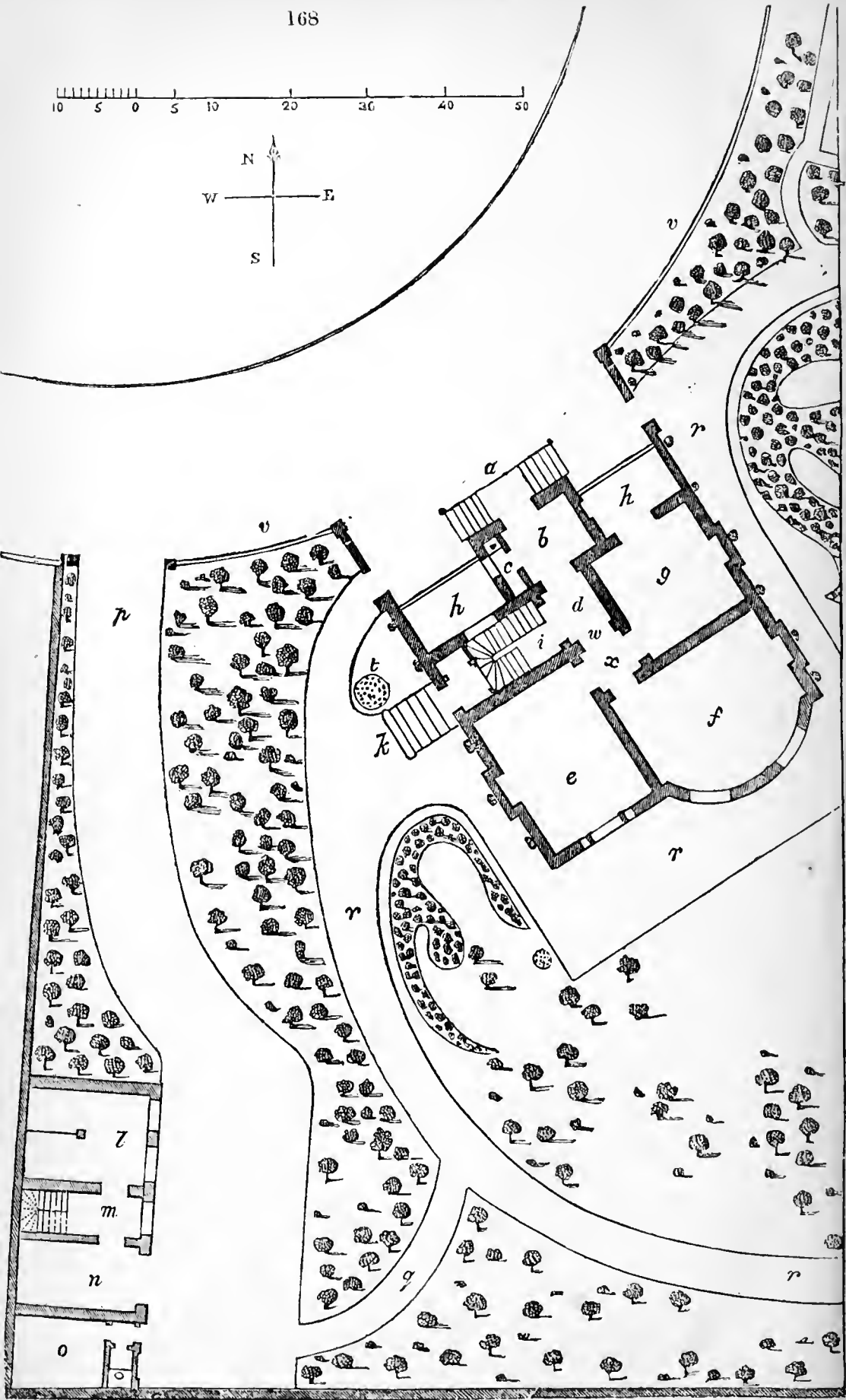
to the colonnade opposite to each column ; the spaces between the beams will be filled in with rich lacunaria. The corners of the building are finished with massive antæ, having bases and capitals composed upon the principles of Grecian architecture. The flanks of the cell are pierced with windows, which are ornamented with the Greek antæ, surmounted with architraves and cornices. The doors of entrance are in the centre of the north and south fronts : they are each 16 ft. wide in the clear, by 32 ft high ; their outside finish consists of antepagmenta of 2 ft. 7 in. wide, the supereilium of which is surmounted with a frieze and cornice ; the cornice is supported by rich consoles, of $6\frac{1}{2}$ ft. in height, and the cymatium is ornamented with sculptured honey-suckles. The exterior of the whole structure will be composed of fine white marble, slightly tinted with blue. The vestibules, which are approached by means of the doors at each end of the building, are ornamented with marble antæ, columns, and entablature, of the Greek Ionic order, which support a vaulted ceiling, consisting of elliptical groin arches, enriched with frets, guilloches, and lacunaria ; the columns, which are sixteen in number, will each be composed of a single piece of marble ; the proportions of the order are from the temple on the Illusus at Athens. The lobbies in the second story are directly over the vestibules, and occupy the same space. The columns in this story, which are also sixteen in number, will be composed in the simplest form of Corinthian or foliated architecture, proportioned from those of the tower of Andronicus Cyrrhestes at Athens ; the entablature will be surmounted with groin arches, similar to those in the vestibules, the soffits of which will be enriched with lacunaria. The stairways will always be composed of marble ; they will be constructed in the four corners of the building, each occupying a space of 22 ft. by 26 ft., extending the whole height of the edifice ; these openings will each be crowned with a pendentive parabolic dome, surmounted with a skylight of 10 ft. in diameter ; the height of the skylight from the floor will be 80 ft.

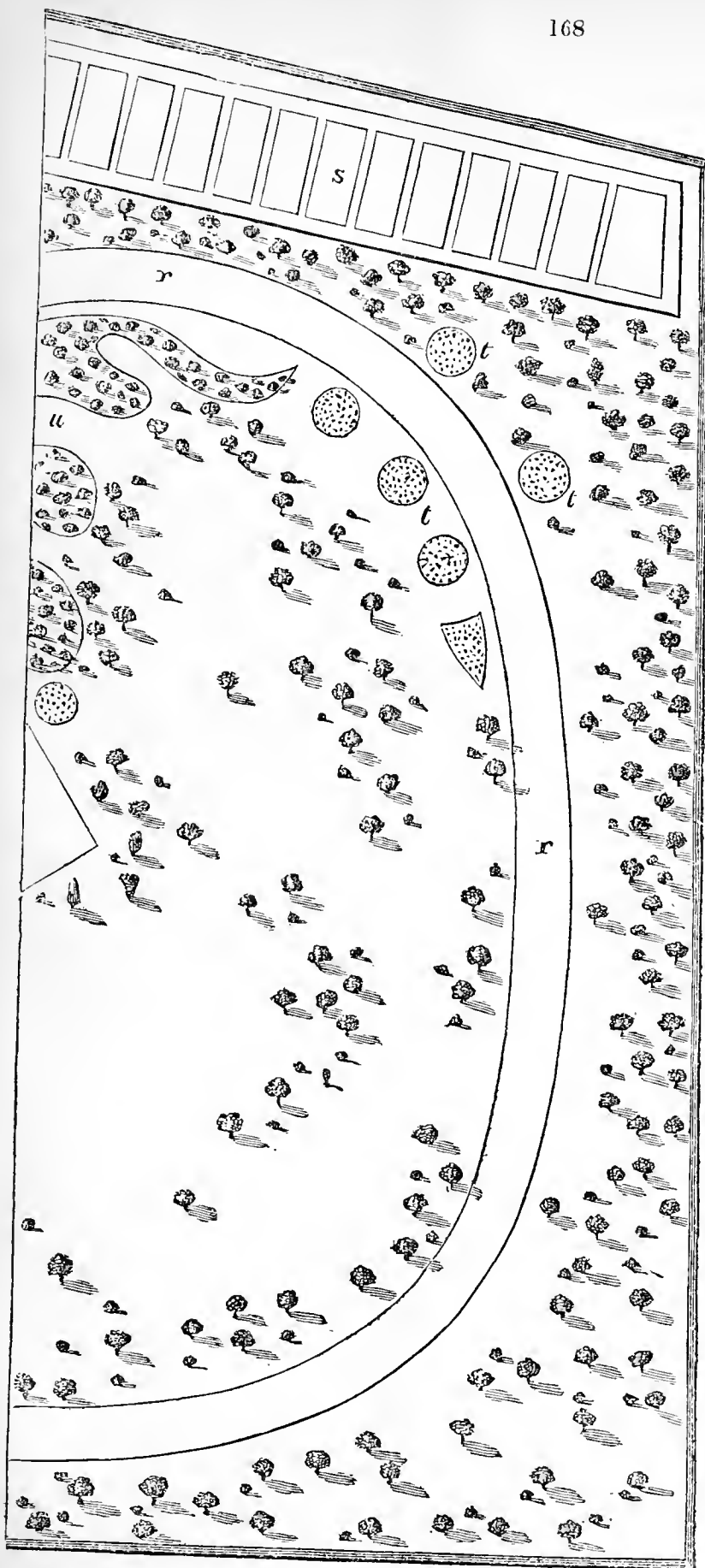
“ The building is three stories in height ; each of which is 25 ft., from floor to floor : there are four rooms of 50 ft. square in each story. Those of the first and second stories are vaulted with groin arches ; and those of the third story, with domes supported on pendentives, which spring from the corners of the rooms at the floor, and assume the form of a circle on the horizontal section, at the height of 19 ft. These rooms are lighted by means of skylights of 16 ft. in diameter. All the domes are terminated below the plane of the roof ; and the skylights are designed to project but 1 ft. above it, so as not to interfere with the character of the architecture. The whole building will be warmed by means of furnaces, placed in the cellar ; and every apartment will be ventilated upon philosophical principles.”

Since the building was commenced, five annual reports respecting its progress have been made to the Building Committee, by the architect, Mr. Walter (who is now, Sept. 1838, in Italy, studying the marble roofs there). Some of these reports contain very interesting statements respecting the contraction and expansion of materials ; and, as they show, besides, the regular business-like habits of the Americans, and the nicety and accuracy of their calculations, they will form the subject of a separate article in a future Number. — *Cond.*

ART. IV. *A House for an Invalid.* By T. K.

THIS house, the plans of which are shown in *figs.* 168. and 170., was designed by an invalid architect (who is so infirm as not to be able either to stand or walk), for his own occupation.



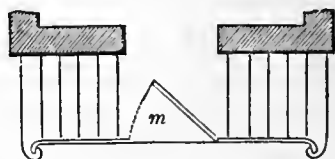


It was built in the year 1837, in the neighbourhood of Kensington, on the piece of ground of which *fig.* 168. shows the plan.

The surface of the ground is perfectly flat; the soil is a free loam on gravel, and the situation is very airy. There is a distant and extensive view of the Surrey hills; and a nearer view of Brompton, Sloane Street, Chelsea (old and new churches), Battersea, and Wandsworth churches and chapels, and the turret and cupola of Chelsea Hospital; the foreground being fields and nursery and garden grounds. The situation is within a mile of Hyde Park Corner, and quite near Kensington and Kensington Gardens, and is exceedingly convenient.

The ground plan of the house, in *fig.* 168., shows the entrance (*a*) by a double flight of steps, which ascends to a level landing, with an open iron gate (*fig.* 169. *m.*),

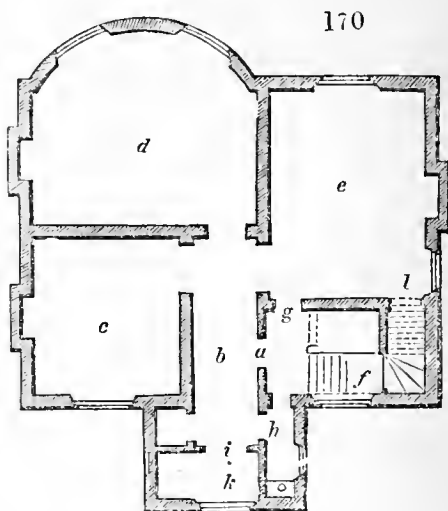
169



which opens inwardly, to admit a person to be wheeled into the house directly from a carriage, which can be driven up close to the landing for that purpose. By means of this landing, therefore, the easiest possible mode is provided for an invalid either getting into his carriage or out of it. The lobby is shown at *b* in *fig.* 168., from which there is a water-closet at *c*; *d* is a hall or landing, separated from the stairs and the lobby by close doors; *e* is the dining-room; *f*, the library; *g*, the parlour; *h h*, sunk areas, with steps to servants' entrance, from which there are vaults for coals, servants' water-closet, and other conveniences; *i*, small closet, for great coats, clogs, and umbrellas, &c.; *k*, flight of steps to garden, underneath which there is a water-tank; *l*, two-stalled stable; *m*, harness-room and staircase to the coachman's room and hay-loft above; *n*, coach-house; *o*, yard for stable dung and other refuse, with a privy for the coachman and gardener; *p*, carriage entrance to the stable and coach-house; *q*, private walk to ditto; *r r r*, broad gravel walk, along which the invalid can be wheeled on his chair, and may thus perform the circuit of his garden without turning; *s*, beds of culinary herbs and small fruits; *t*, circular beds of small flowers; *u*, beds of artistical shapes, containing peat-earth shrubs and roses; and *v*, a stone kerb, surmounted by an open iron railing, with a holly hedge within. The rest of the boundary fence is a brick wall 8 ft. high, planted, on the side where the culinary vegetables are, with fruit trees; and on the other two sides, which are fully exposed to the view of the house, with ornamental climbers, and other ligneous plants suited for walls, both deciduous and evergreen; while on the side against the stable it is planted with ivy. The whole of the ground, except the walks, the flower-beds, and the beds for culinary vegetables, is laid down in turf, and varied by shrubs and low trees, none of which attain a larger

size than the laburnum. On each side of the carriage road (*p*) the trees are thicker, and consist chiefly of hollies, evergreen oaks, box, and other evergreens. There are no trees against the walls of the house, because the intended occupier is of opinion "that, however beautiful they may be in point of appearance, they are most destructive to buildings, by harbouring damp, and by the continual use of nails in training and fastening them." [The latter injury may be avoided by trellising the walls; and the former, by planting such evergreens as the common ivy, than which there is not a more effective preservative of a wall against external damp.]

In the plan of the first floor (*fig. 170.*), *a* is the situation of a door which completely shuts out the whole of the wind, which might otherwise come up the staircase from the ground floor, from the gallery (*b*), bed-room (*c*), drawingroom (*d*), and morning-room (*e*); *f* is a door on the staircase leading to the attic, which shuts out all wind that might come down from the attic floor; *g* and *h* are doors which are only opened by servants occasionally; *i* is a coloured glass folding door, which, while it admits the light from the window *k*, prevents the awkward appearance which the window would otherwise have, from not being opposite the centre of the gallery; *l* is a door to a closet which is under the attic stairs.



Remarks. The following are by the author of the plan:—
 "The comfort and convenience of the inside of this house have been considered without reference to the symmetry or appearance of the outside. The gable-end walls being carried up straight, allow of there being five good rooms in the attic floor; and the projecting eaves keep the roof dry. Under the whole of the basement floor, there is a layer of concrete 6 in. thick, on which is placed a layer of clean loose shingly gravel, the pavement being laid above. This loose gravel, besides being dry, prevents the possibility of rats, mice, or other vermin burrowing in it; and the concrete prevents all evaporation from the subsoil. The great objection to most London houses for an invalid is, that the staircase forms a kind of funnel, charged from top to bottom with cold air; the consequence of which is, that an invalid coming out of any of the rooms is almost sure to catch cold. This evil is effectually prevented in the plan *fig. 170.*, by the doors *a* and *f*; and, in cases where an invalid could not ascend

even one flight of stairs, the same advantage might be obtained on the ground floor, by putting in a glass door at w , in *fig.* 168., which, with the three doors of the rooms, would make the lobby x an enclosed square. In this case the room g might be used as a bed-room.

“It will be seen from the plan that there may be free access to all the other parts of the house, without at all encroaching on the convenience and privacy of the first floor; and, from what has been stated above, that the ground floor may be shut up in the same manner, leaving still a free communication between the basement floor and the attic. Should the house be several stories high, it will be evident the same plan may be applied to any of the floors.

“Every house intended for an invalid should have an inner door at the entrance, which should be kept closed till the street door is shut; which will prevent the rush of cold air which would otherwise get into the body of the house, and will admit only the small quantity which is contained in the space between the outer and the inner doors, and which gets in at each time of opening.”

ART. V. *Hints on Construction: addressed to Architectural Students.*
By GEORGE GODWIN, Jun., F.S.A. and M.I.A.

NO. 5. BRICKS AND BRICKWORK. (*Continued from p. 415.*)

EVERY treatise on the art of building contains an assurance that brickwork carried up in *English bond* is stronger than that which is executed according to the *Flemish* mode. Every bricklayer who has had experience will say the same thing, if he be asked; and a careful examination for oneself of the two methods, which every one who would arrive at a sound conclusion is called upon to make, will confirm the fact. Now, in spite of all this, we still find the *Flemish bond* adopted in five out of six of the new buildings that are to be observed every day springing up around us with almost dangerous rapidity; and an enquirer would naturally seek for the cause of this singular disagreement between precept and practice. It is manifold and close at hand. Workmen have become accustomed to the latter mode: a good appearance can be produced with less trouble than when *English bond* is used; and, what is more important than all in the estimation of the speculator, it allows him to use inferior bricks (bricks which, by the mere operation of carting, have become broken into pieces); insomuch as bats may be as advantageously employed for it, so far as appearance goes, as whole bricks. We do not say but that *Flemish bond* might be more effective if better performed than it is: but we speak of it as it is usually executed; and we do not think that the facts we have mentioned, as the

causes of its general use, will be regarded in the same light by the architect, but rather as reasons against the adoption of it. True, the superior appearance which, from being accustomed to it, if from nothing else, the majority of persons believe the Flemish bond to present, may induce some of those who know its disadvantages to prefer it. Even in this case, however, the basement story of the building (in which place strength is important even in a greater degree than elsewhere) may be constructed in the other manner, being usually hidden from sight; and, when it is intended that the exterior of the house shall be covered with Roman cement, or other composition, the argument would, of course, wholly cease to have weight. For our own part, we are contented to believe what has been said many times, that as good a front may be made by using English bond, if proper care be taken, as by adopting the other; and, therefore, should unquestionably employ it, where the workmen could be depended on; knowing full well its superiority in regard to strength, and feeling assured that a short time would suffice to render it pleasing in the eyes of others. Every one must have observed the odd, sometimes absurd, effect produced in the minds of all by the first appearance of a hat or coat fashionable in a preceding age. Multiply the form, however; render it again generally worn, and it speedily becomes generally liked.

If custom insist upon retaining the appearance afforded by Flemish bond, a part of the evil may be avoided, it has been suggested, by using English bond withinside, and casing the outside, as it were, with Flemish bond. The weight of the greater quantity of timber in a building is usually upon the inside half of the walls; and the evil, therefore, may probably be lessened by this course, when the walls are thick enough to admit of it; and, by using more whole headers, in the place of bats, the danger of a separation might be prevented. The greatest care would be required, however, so to bond the whole together, that no division could possibly take place.

To enter here on an elaborate description of the two methods might be deemed uncalled for and tedious, and we shall therefore do little more than allude to them.

Flemish bond, as generally performed, implies the arrangement of headers and stretchers *alternately in the same course*, which said headers are, for the most part, merely bats; and thus a wall so constructed often consists of two separate leaves, if we may so speak, very slightly connected together; and the possibility of their separation or dislocation is obvious.

In English bond, on the contrary, each course consists alternately wholly of headers (or bricks laid in the direction of the thickness of the wall), and wholly of stretchers (or bricks laid

in the direction of the length of the wall), so that it is bonded together throughout equally, and cannot easily suffer any disruption, unless the bricks themselves be broken by the force exerted. We should recommend the student to obtain a score of bricks, or, better still, some small wooden models of bricks, half bricks, and quarter bricks, or closers, and essay for himself the different combinations which may be produced.

It would seem needless to say that the angles of a building require to be well bonded, and that the architect, or the clerk of the works, if there be one, should have a watchful eye in this respect. It cannot, however, be repeated too often; insomuch as workmen frequently fail to give that additional degree of care which, in order to make sound work, is there required; and unsightly settlements, even if nothing more serious occur, are the certain results. Pieces of thin iron hoop may be advantageously used in some situations, as an additional precaution. We may remark that, if it be intended to cover the exterior of the building with cement, the necessity for care to prevent settlements is not lessened, but increased; insomuch as the slightest disruption produces a crack, which is always strikingly visible, and which *cannot be repaired* without first cutting down a large portion of the cement work on each side of the fissure, and even then not always effectually.

Many walls, which externally appear to be well bonded together, are in reality defective, through want of proper bond in the horizontal, as well as the perpendicular, joints. In walls not less than two bricks and a half in thickness, especially for foundations, or where they are required to resist great thrust, it will be found a good precaution to introduce occasionally two courses, one over the other, of diagonal or herring-bone bond, which may be done without interfering with the appearance presented by the work externally. In the lower course of a two and a half brick wall, carried up in English bond, for example, there may be on the outside a line of stretchers; then a course of bricks placed diagonally, forming an angle of about 45° , and having the interstices filled up solid; and against them a line of headers, constituting the other face of the wall. In the upper course, the operation would be merely reversed: a line of headers would form the outside, and one of stretchers the inside, face; and the diagonal bricks would be placed in a contrary direction to the last. Even in a two-brick wall diagonal bond may be introduced; but then it must be in single courses only, between courses of ordinary English bond, as otherwise the face of the wall, not being tied in, would be liable to bulge.

We have said, when speaking of diagonal bond, that the interstices should be filled up solid. This should be done in all cases, never allowing the use of bats where whole bricks can be

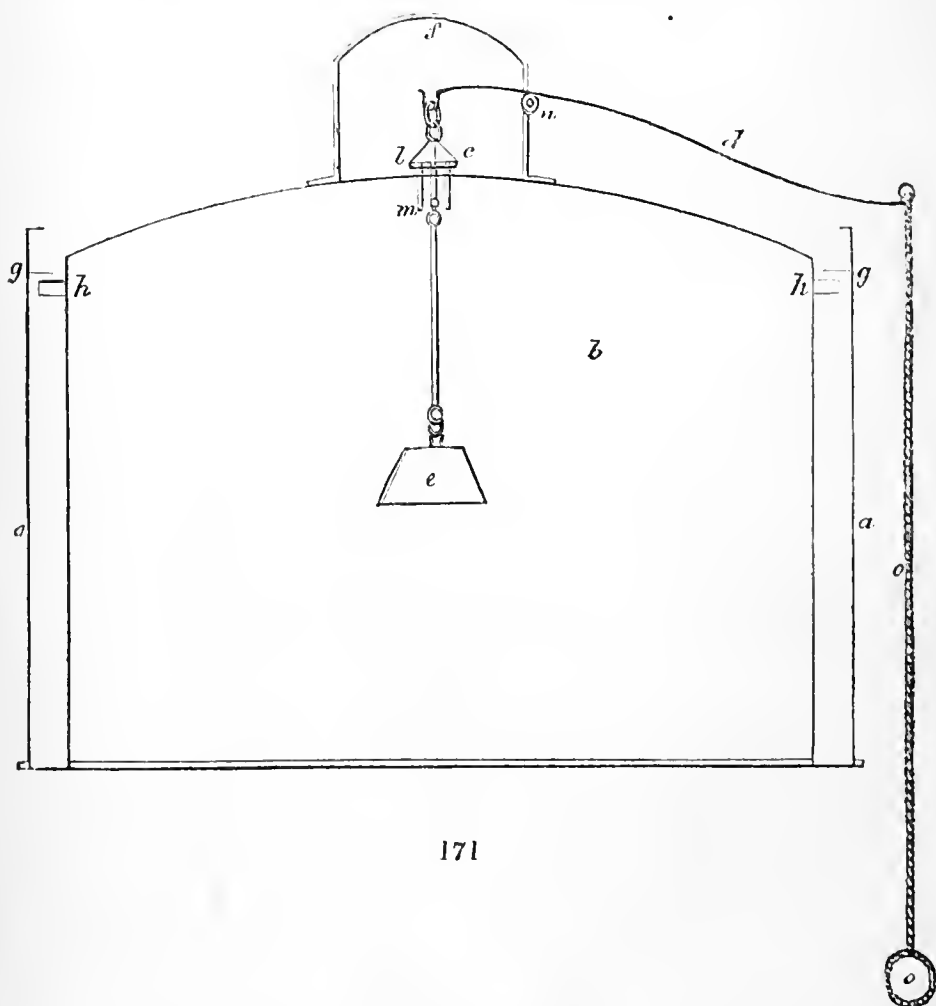
introduced ; nor of mortar where *closers* (that is to say, half bats) will serve the purpose. Every crevice in the one course should then be filled with mortar or flushed up, and the whole made perfectly sound and level to receive the next. When brickwork is treated in this manner, provided the weather be not too dry, and the mortar good (on which head more elsewhere), no farther steps are necessary ; but as, unfortunately, in the greater number of instances, it is *impossible* to insure the care thus required, the bricklayer's specification should in all cases contain a direction "to grout the work with hot lime and water every eight courses in height," which, *en passant*, we may suggest, does not mean, to slobber the face of the wall with the mixture (we know no better word), as some workmen seem to think it does, but to fill up every crevice left by the bricklayer in the interior of it, through carelessness. It likewise serves another useful office, as we think, which may be mentioned. Bricks are often used perfectly dry, and covered with dust, and sometimes even when heated by the sun ; in consequence of any of which circumstances the mortar round about each brick is rapidly dried : it is not permitted to be absorbed into the substance of the brick, and sets quickly, without perfectly adhering to it. Indeed, even the imperfect adhesion which does take place is afterwards interfered with by the mere operations of the bricklayer in regard to the next courses ; insomuch as mortar, once set, begins to indurate in the form taken, and this form cannot afterwards be changed without destroying the value of the mortar. The best mode of proceeding is, to soak each brick in lime-water before laying it ; but, when this is not done, grouting, judiciously performed, may serve as a partial substitute, preventing the too immediate drying of the mortar, and inducing a more general and perfect union of the whole. When it is required that brickwork should dry quickly, grouting is, of course, inexpedient. This would be the case, for example, when building late in the season, and in fear of frost, when we should use the mortar quite hot, and much less fluid than ordinarily, so that the water might be quickly driven off ; as otherwise it might become frozen, and, expanding, as water always does in freezing (being an exception to the general law in nature, that bodies are rendered smaller by the abstraction of heat), cause the mortar to crumble to dust. In such a case as this, we say, grouting should be omitted ; but the whole of such a proceeding, although oftentimes expedient, would unquestionably entail the sacrifice of a certain degree of stability.

Pilasters, rusticated quoins, and other projections, whether to be covered with cement or not, should be arranged, as regards their width, so as to bring in whole or half bricks, and will then materially assist to strengthen the walls. The core for all proposed decorations in cement, such as cornices, string courses,

and sills (which latter, however, should in all cases be of stone if practicable), should be *built* with the walls, and not stuck on afterwards, or dubbed out, as it is termed, which is too commonly the case; and for this purpose, when the projection is large, cement should be used instead of mortar, to prevent accidents, notwithstanding that an overlaying course of stone may have been first bedded on the wall to receive the bricks.

ART. VI. *Description of a cheap portable Shower-Bath, invented by James Milne, Brass-Founder, Edinburgh.* Communicated by Mr. Milne.

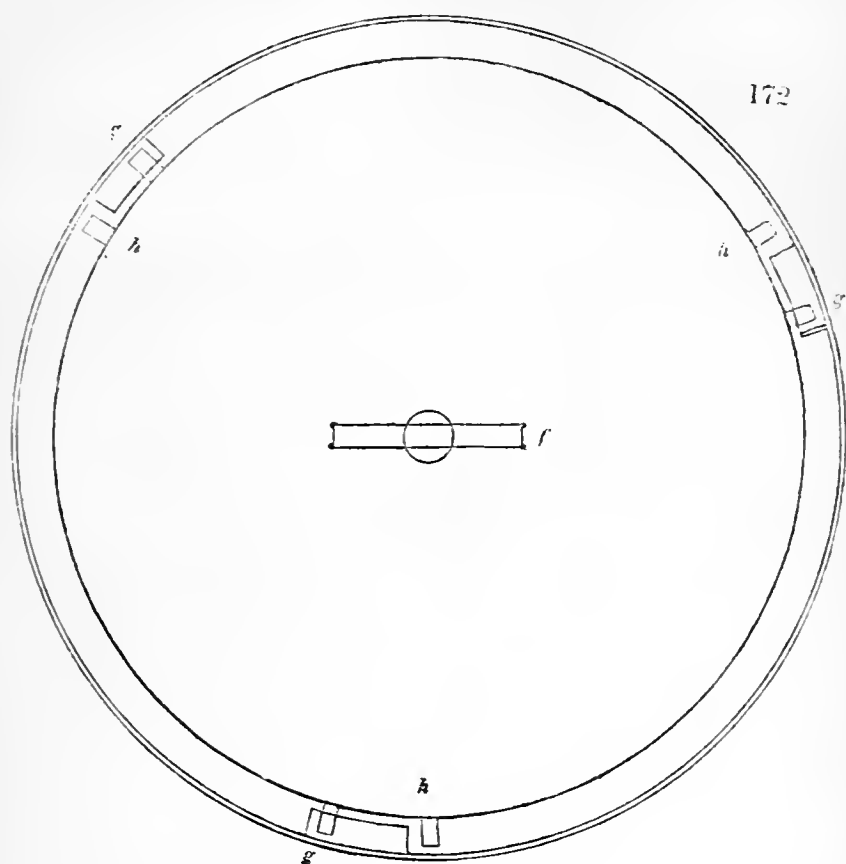
FIG. 171. is a section of the bath, with its cistern, or outer case; and fig. 172. is a top view, showing the manner in which



171

it is connected to its case, so as to be carried from one place to another; *a* is the cistern, or outer case, made about 1 in. larger in diameter, and 1 in. deeper, than *b*; *b* is the vessel to contain the water to produce the shower, having a bottom perforated

with fine holes, about $\frac{1}{30}$ of an inch in diameter, the top a little raised, having in the centre a tube (*m*) soldered into it; *c* is an air-tight valve, with a leather face (*l*), which the lead weight *e* pulls close, so as to exclude the pressure of the atmosphere; *f* is a bow, or handle, to carry or hang the bath by, having a slit at *n*, to allow the wire lever *d* to pass through. The lever (*d*) is connected to the valve (*c*) by a hook, and has its fulcrum at



n, on a wire pin soldered across the slit in *f*. By pulling the string *o*, and raising the valve, the pressure of the atmosphere is admitted to the surface of the water in *b*, allowing the water to escape in a shower from the bottom. The moment the string is let go, the water ceases to run. The shower may be continued as long as there is water in the vessel, by continuing hold of the string. *h h h* are three pins soldered to the vessel *b*, near the top; which pins slip under three plates, kneed down at one end to stop the pins, and soldered to the inside of the vessel *a*. When the pins are turned to the left, to the position of the dotted lines, the outer case is lifted along with the vessel *b*.

To use the Bath. — Fill the outer case with water, either cold or tepid, till within 1 in. of the top; then sink the bath into the water, pressing it down gently, keeping the valve open all the time, to allow the air to escape, till it reaches the bottom; then turn the bath a little round, as shown in *fig. 172*. by the

position of the pins, and carry it to the place it is to be used, and hang it from the roof by a hook, or raise it by a cord over a pulley; then turn the outer case to the right, to free the pins, and remove it from the vessel: the water will remain in the bath till air be admitted by the valve. By pulling the string, you can have a shower at pleasure, short or long, while there is water in the vessel. The bath may be made of any size, by any country tinsmith. A cock may be used instead of the valve, having a long lever attached to the key, with a balance at the opposite end to the string, of sufficient weight to overcome the friction of the cock, and keep it always shut; except when kept open by the string.

Edinburgh, July, 1838.

REVIEWS.

ART. I. *A Dictionary of Arts, Manufactures, and Mines; containing a clear Exposition of their Principles and Practice.* By Andrew Ure, M.D., &c. 8vo. To be completed in Ten monthly Parts, at 5s. each. London, 1838.

“THE author has embodied in this work the results of his long experience as a professor of practical science. Since the year 1805, when he entered at an early age upon the arduous task of conducting the schools of chemistry and manufactures in the Andersonian University, up to the present day, he has been assiduously engaged in the study and improvement of most of the chemical, and many of the mechanical, arts. Consulted professionally by proprietors of factories, workshops, and mines of various descriptions, both in this country and abroad, concerning derangements in their operations, or defects in their products, he has enjoyed peculiar opportunities of becoming familiar with their minutest details, and has frequently had the good fortune to rectify what was amiss, or to supply what was wanting. Of the stores of information thus acquired he has availed himself on the present occasion; careful, meanwhile, to neglect no means of knowledge which his extensive intercourse with foreign nations affords.”

Part I., consisting of 120 pages, carries on the alphabet as far as “Bismuth,” and amply justifies the foregoing address. The articles in this part which chiefly interest the architect are: Alabaster, to which upwards of a page is devoted; Alloy, Alum, Anthracite, Antiseptics; Artesian Wells, including the mode of boring for water, with the different tools, &c., in use, an excellent article, illustrated by numerous cuts, and occupying $4\frac{1}{2}$ pages; Automaton, a very curious article; Balance, very instructive; Baths, a valuable article, occupying 3 pages; and Beer, including plans and sections of an improved malt kiln; and also the plan, machinery, and utensils of a great brewery. Taking the work altogether, it may safely be pronounced the most valuable of the kind which has ever appeared, either in this country or on the Continent; in short, it is one which we do not believe could have been produced by any other person than Dr. Ure.

ART. II. *Sketch of the Civil Engineering of North America; comprising Remarks on the Harbours, River and Lake Navigation, Lighthouses, Steam Navigation, Water-Works, Canals, Roads, Railways, Bridges, and other Works in that Country.* By David Stevenson, Engineer. 8vo, pp. 320. London, 1838.

WE have perused this work with interest and pleasure; with interest, as showing not only the progress which the Americans are making in all the great features of territorial improvement, but as indicating the characteristic modes in which these great works are carried into effect. We see in America, more than in any country of Europe, the essential and the useful, entirely separated from the unnecessary and ornamental. The pleasure we have received has been chiefly from observing the total want of prejudice in the observations of Mr. Stevenson; a very rare quality in writers on America, whether these be general or professional observers.

In a three months' tour, Mr. Stevenson visited Upper and Lower Canada, and the most interesting parts of the United States. He saw many of the principal seaports, and navigable rivers, two of the great lakes, the principal canals, railroads, bridges, common roads, &c.; and the most remarkable of the works for supplying the cities with water. The steam navigation, and the system of lighthouses (the latter, one in which Mr. Stevenson has rendered his name celebrated), also came occasionally under his observation. In this extensive field, he saw a good deal that was entirely new to him; and hence his desire to lay his observations before his professional brethren: not so much to satisfy their curiosity, as to stimulate others to bestow a more thorough examination on the ground which he has gone over. "Judging," he says, "from the attention shown me by all classes of persons in America, and their readiness to communicate freely every kind of information, I feel certain that any such extended engineering tour would be attended with no less pleasure than interest."

The following passage may be considered as the essential result of Mr. Stevenson's tour:—"Civil engineering, as practised in America, is not always applicable to the circumstances of Europe; but still, the modifications to which it is subject in a new country may prove useful, by suggesting various methods of working, adapted to local circumstances, or limited funds." (p. ix.)

We pass over Chapter i. Harbours, ii. Lake Navigation, iii. River Navigation, and iv. Steam Navigation, to glance at v. Fuel and Materials. Anthracite coal is much used for domestic purposes in New York, Philadelphia, Baltimore, and Washington. It is burned sometimes in stoves, and sometimes in

the open fireplace. Brick is the building material for dwelling-houses in large towns, in most of which wooden structures are not now permitted to be erected. The public edifices are generally built of marble, which is found in great abundance in different parts of the country; the finest marble, however, is found in the neighbourhood of Philadelphia.

"The public buildings in Philadelphia, most of which were designed by Mr. Strickland, architect in that city, present by far the finest specimens of architectural design which are to be met with in the United States; and the extreme purity of the marble of which they are built adds greatly to their general effect. The new Girard College at Philadelphia, designed by Mr. Walter, architect, is at present in an advanced state of progress, and promises, when completed, to be a magnificent building. The marble of the United States is rather coarse in the grain, and not very suitable for forming the finely wrought capitals of columns; and the materials of those parts of all the pillars of the public buildings in Philadelphia were therefore brought from Italy.

"I visited some of the quarries in the neighbourhood of Philadelphia, in which the beds of marble dipped from north to south, at an inclination of 60° with the horizon. In one of them the quarriers were working a bed 14 ft. in thickness, at a depth of 120 ft. below the surface. The blocks of marble, some of which weighed 12 tons, are raised to the surface of the ground by means of a horse-gin. A thick layer of common limestone rests on the marble: this is blasted off with gunpowder, and burned for making mortar.

"Grey-coloured granite, of excellent quality, occurs at Quincy, in Massachusetts, and Singing, on the Hudson. The only hydraulic works in which it has been used are the graving-docks at Boston and Norfolk; but it has also been used a good deal in New York for door-lintels and stairs, and latterly has been introduced for public buildings. The Astor Hotel, the jail, and some others, are formed of it.

"It is much to be regretted that there are no building materials in the neighbourhood of New York. On examining the ground laid open in some of the railway cuttings in the vicinity of the town, I found it to consist of a stratum of gravel from 10 ft. to 15 ft. in depth, with boulder-stones of granite, mica-slate, greenstone, and red sandstone; below this, mica-slate occurs, dipping from north to south, at an angle of 45° ; but it is not fit for building purposes. This formation occurs on the island of Manhattan, on which the town of New York stands, and also on Long Island, which protects its harbour.

"The fine timber which the country produces is much employed in all the public works; and, while it serves in some degree to compensate for the want of stone, it also affords great advantages for ship-building and carpentry, which have been brought to high perfection in America."

Chapter VI. treats of Canals, and Chapter VII. on Roads. Road-making has been very little cultivated in America; and it was not until the introduction of railways that the Americans entertained the idea of transporting heavy goods by any other means than by canals or rivers. Their objection to paved or Macadamised roads is founded on the prejudicial effects on such roads of the severe and protracted winters, and also the expense of procuring suitable materials; stone, fit for road-making being rare in America. The public roads, therefore, are, in most parts of the Union, little better than mere tracts formed by levelling the surface.

“The roots of the felled trees are often not removed; and in marshes, where the ground is wet and soft, the trees themselves are cut in lengths of about 10 or 12 feet, and laid close to each other across the road, to prevent vehicles from sinking; forming what is called in America a “Corduroy road,” over which the coach advances by a series of leaps and starts, particularly trying to those accustomed to the comforts of European travelling.

“Some interesting experiments have lately been set on foot at New York, for the purpose of obtaining a permanent and durable City Road, for streets over which there is a great thoroughfare. The place chosen for the trial was the Broadway, in which the traffic is constant and extensive.

“The specimen of road-making first put to the test was a species of causewaying or pitching; but the materials employed are round water-worn stones, of small size; and their only recommendation for such a work appears to be their great abundance in the neighbourhood of the town. The most of the streets in New York, and, indeed, in all the American towns, are paved with stones of this description; but, owing to their small size and round form, they easily yield to the pressure of carriages passing over them, and produce the large ruts and holes for which American thoroughfares are famed. To form a smooth and durable pavement, the pitching-stones should have a considerable depth, and their opposite sides ought to be as nearly parallel as possible, or, in other words, the stones should have very little taper. The footpaths, in most of the towns, are paved with bricks set on edge, and bedded in sand, similar to the “clinkers,” or small hard-burned bricks, so generally used for road-making in Holland.

“The second specimen was formed with broken stones; but the materials, owing chiefly, no doubt, to the high rate of wages, are not broken sufficiently small to entitle it to the name of a “Macadamised road.” It is, however, a wonderful improvement on the ordinary pitched pavement of the country; and the only objections to its general introduction, as already noticed, are the prejudicial effects produced on it by the very intense frost with which the country is visited, and the expense of keeping it in repair.

“The third specimen is rather of an original description. It consists of a species of tessellated pavement, formed of hexagonal billets of pine wood, measuring 6 in. on each side, and 12 in. in depth. From the manner in which the timber is arranged, the pressure falls on it parallel to the direction in which its fibres lie; so that the tendency to wear is very small. The blocks are coated with pitch or tar, and are set in sand, forming a smooth surface for carriages, which pass easily and noiselessly over it. There can be no doubt of the suitableness of wood for forming a roadway; and such an improvement is certainly much wanted in all American towns, and in none of them more than in New York. Some, however, have expressed a fear that great difficulty would be experienced in keeping pavements constructed in this manner in a clean state, and that, during damp weather, a vapour might arise from the timber, which, if it were brought into general use, would prove hurtful to the salubrity of large towns.

“In the northern parts of Germany, and also in Russia, wooden pavements are a good deal used. My friend Dr. D. B. Reid informs me that, at St. Petersburg, a wooden causeway has been tried with considerable success. The billets of wood are hexagonal, and are arranged in the manner of the American pavement. At first, they were simply embedded in the ground; but a great improvement has been introduced by placing them on a flooring of planks laid horizontally, so as to prevent them from sinking unequally. This has not, so far as I know, been done in America.”

Chapter VIII. Bridges. These are, in general, constructed entirely of wood, and roofed in, like the wooden bridges of Switzerland and Germany. Plans and elevations are given of four different kinds. One of these, “Town’s patent lattice bridge,”

reminds us of the model of a bridge made by a Russian peasant, intended to cross the Neva at Petersburg, by one arch, and which in, 1814, formed an ornament to the Taurida Gardens. This arch was formed of latticework, exactly like "Town's."

Chapter ix. Railways, is full of information, illustrated by numerous engravings; as is Chapter x. Water-works. Chapter xi. is on Lighthouses.

Chapter xii. House-moving, is curious; but it does not appear that much is gained by the process. A flooring of beams is introduced below the foundation of the house, and rests on three or more beams; these beams resting on others, on which they are slid along, impelled by powerful screw-jacks, and by greasing the surfaces of the beams that come in contact.

"In consequence of the great value of labour, the Americans adopt, with a view to economy, many mechanical expedients, which, in the eyes of British engineers, seem very extraordinary.

"Perhaps the most curious of these is the operation of moving houses, which is often practised in New York. Most of the old streets in that town are very narrow and tortuous; and, in the course of improving them, many of the old houses were found to interfere with the new lines of street; but, instead of taking down and rebuilding those tenements, the ingenious inhabitants have recourse to the more simple method of moving the whole, *en masse*, to a new site. This was, at first, only attempted with houses formed of wooden framework, but now the same liberty is taken with those built of brick. I saw the operation put in practice on a brick house, at No. 130. Chatham Street, New York, and was so much interested in the success of this hazardous process, that I delayed my departure from New York for three days, in order to see it completed. The house measured 50 ft. in depth, by 25 ft. in breadth of front, and consisted of four stories, two above the ground floor, and a garret story at the top, the whole being surmounted by large chimney stacks. This house, in order to make room for a new line of street, was moved back 14 ft. 6 in. from the line which the front wall of the house originally occupied; and as the operation was curious, and exceedingly interesting in a engineering point of view, I shall endeavour to describe the manner in which it was accomplished."

After describing the operation, Mr. Stevenson proceeds:—

"The operation is attended with very great risk, and much caution is necessary to prevent accidents. Its success depends chiefly upon getting a solid and unyielding base for supporting the screw-jacks, and for the prolongation of the beam to the new site which the house is to occupy. It is further of the utmost importance that, in working the screws, their motion should be simultaneous, which, in a range of 40 or 50 screw-jacks, is not very easily attained. The operation of drifting the holes through the walls also requires caution, as well as that of removing the intermediate pieces between those of the beams, which pass through both walls. The space between the beams is only 2 ft., and the place of the materials removed is, if necessary, supplied, while the house is in the act of moving, by a block of wood which rests on the beams. The screw-jacks, by which the motion is produced, require also to be worked with the greatest caution, as the cracking of the walls would be the inevitable consequence of their advancing unequally.

"Notwithstanding the great difficulty attending the successful performance of this operation, it is practised in New York without creating the least alarm in the inhabitants of the houses, who, in some cases, do not even remove their furniture while the process is going forward. The lower part of the house which I saw moved was occupied as a carver and gilder's shop; and, on Mr.

Brown, under whose directions the operation was proceeding, conducting me to the upper story, that he might convince me! that there were no rents in the walls or ceilings of the rooms, I was astonished to find one of them filled with picture frames and plates of mirror glass, which had never been removed from the house. The value of the mirror glass, according to Mr. Brown, was not less than 1500 dollars, which is equal to about 300*l.* sterling; and so much confidence did the owner of the house place in the success and safety of the operation, that he did not take the trouble of removing his fragile property. I understood from Mr. Brown that the whole operation of removing this house, from the time of its commencement till its completion, would occupy about five weeks; but the time employed in actually moving the house 14½ ft. was seven hours. The sum for which he had contracted to complete the operation was 1000 dollars, which is equal to about 200*l.* sterling. Mr. Brown mentioned that he and his father, who was the first person who attempted to perform the operation, had followed the business of 'house-movers,' for fourteen years, and had removed upwards of 100 houses, without any accident, many of which, as in the case of the one I saw, were made entirely of brick. I also visited a church in 'Sixth' Street, capable, I should think, of holding from 600 to 1000 persons, with galleries and a spire, which was moved 1100 ft.; but this building was composed entirely of wood, which rendered the operation much less hazardous."

We intended to give a quotation from p. 196. to 199., on the subject of "canal travelling in many parts of America;" but for this very curious passage we refer the reader to the work itself; which, whether he be professional or non-professional, he will find well worthy of perusal.

ART. III. *An Historical Essay on Architecture*. By the late Thomas Hope. Illustrated from drawings made by him in Italy and Germany. Royal 8vo, 2d edition. London, 1835.

(Continued from p. 423.)

CHAP. XXXIV. *Examination of various Conjectures on the Subject of the Change from round to pointed Architecture, and of the Origin of the latter*. The author commences by giving the opinions of others on this subject; in which he passes in review the hypotheses of an avenue of trees, adopted by Warburton and others; of the oak woods, in which druids burned their human victims in osier baskets; of some of the posts, branches, and twigs interwoven together, of Sir James Hall; and of the stone edifices of the Gothic nations of the north; where, however, the oldest Scandinavian church known, that of St. Eric, at Upsal, built, in 1118, on the ruins of the most celebrated temple of Odin, was, he informs us, erected in "more Romano." Failing to find the origin of the pointed style in the North, recourse was had to the Saracenic mosques of the South. Dr. Milner's opinion, that the idea of the pointed arch was suggested by the intersections of circular arches, is rejected, and the author thus concludes:—

"Were I disposed to found a new theory on a mere superficial resemblance, I might trace the last and most luxuriant efflorescence of the Gothic style, not to the barbarians of the North, but to the most anciently civilised nation of the South, indeed of the terraqueous globe, to that nation to which we naturally look for every art and science of which we cannot discover a later and nearer origin, to the Hindoos. A few miles north of Sadras, on the Coromandel coast, at a place called Maralipuram, are the ruins of two pagodas, of such antiquity as to bear inscriptions which the Hindoos themselves cannot expound, surmounted by coverings composed of two segments of circles, forming a complete pointed arch: or, if I wished to trace my architectonic pedigree to a country more classic than our northern wilds, and yet somewhat less remote than the Indian plains, I might quote, on the now almost deserted coast of Lycia, the thousands of sepulchral monuments, of an era apparently preceding its conquest by the Romans, and bearing Greek inscriptions, which, in the outline of their lids or roofs, equally composed of two segments of circles, uniting in a point, bear a perfectly Gothic countenance; but, however curious both be, from the peculiarity of that form, neither the pagodas on the Coromandel coast, nor the sarcophagi on that of Caramania, seem to have the least essential and fundamental form connected with any modification of what we call Gothic architecture.

"Sir Christopher Wren, himself an architect, and thus seeing more deeply into the productions, at least, of his own art, attributed the change from the round to the pointed style, to a motive, which, if it was not more true and well founded, was at least more weighty, more consistent with the universality of the change, to the wish of rendering the construction of edifices very vast and lofty, less laborious, and less expensive.

"First, by enabling arches of different widths to receive an equal height.

"Secondly, by rendering a less unwieldy apparatus sufficient for arching, and enabling segments of the same circle to be employed for arches of different heights and widths, instead of requiring for each different diameter a different circle.

"Thirdly, by obviating the necessity of keystones.

"Fourthly, by causing stones so small to be required for the vaulting and superior parts, that a single man might carry each in a hod, on his back, up a ladder, to the highest point. But the purposes here set forth required not pointed arches, and the constructors of them did not even avail themselves of the advantages supposed to be afforded by them; for in Greek and Lombard buildings, and in round-headed arches of different diameters, the prolongation of the perpendicular part of the impost, before it was turned into a semicircle, equally brought to a level the summit of the arch. In the construction of gigantic pointed arches, a vast apparatus still was indispensable. In them we generally find keystones, as well as in those round; and though certainly the thin pillars, and slender ribs, and slight roofings of pointed edifices might, in general, require blocks of stone less large and less ponderous than any other style, they often demanded and displayed them very large. Witness the keystones of the vaulting of King's College Chapel, Cambridge. Certainly, where employed, they were hoisted up to a height unexampled in any other architecture. We may add, that the elaborate peculiarities of the new method seemed rather to be conceived for purposes of loftiness and of magnificence, than from motives of mere expediency, particularly where edifices, already finished in the rounded, were altered to the pointed, style."

Chap. xxxv. *The Author's Theory respecting the Invention and Adoption of pointed Architecture.* The extreme interest of this chapter, and the permission before alluded to of the son of the author, induce us to give it entire.

"To me it appears most probable that, in those regions where snow falls thick, and lies long, the necessity of affording to numerous congregations

places of assembly ample and spacious ; temples which, consuming less solid materials, and presenting a lesser number, and a smaller bulk, of those masses of masonry which obstructed the vacant spaces, should yet be covered by a roof sharp and lofty, calculated easily to throw off the wet, yet to weigh lightly on those parts of the building which supported it, that the desire of obtaining these advantages, induced architects to resume the groined arch, known and used, as we have seen, by the heathen Romans, and in the first Christian basilicas, and subsequently discarded, in consequence of the facilities of construction afforded by the profusion of ancient columns which were at hand, and from the readiness with which a timber roof might supply the most urgent necessities ; a mode of building which, in Lombard edifices, was again superseded by the heavy trunk-shaped vault.

“ Together with the groined vault, they reverted to the use of the ribs and ridge bands of stone, which, forming a strong connected skeleton, enabled the interstices to be filled up with thinner integuments of lighter stuff ; and adopted the method of composing the arches or ribs, carried along and across the nave and ailes at right angles with each other, and forming together the square ; so that the two cross arches were framed of two sections of the same diagonal arch that separated the nave from the ailes, made to spring from the piers on which these diagonal arches rested ; but, instead of being carried at right angles with the side arches, made to cross each other, in such a manner that the impost of each rested not on the pier or pillar immediately opposite to it, but upon the next adjoining to that.

“ The natural consequence of this construction would be the formation of an arch pointed at the intersection of these two that were round. While the vault did not require much height, but rather lateral expanse, the arches thus crossing each other were made round, in order to give strength ; but, when more elevation was required, and more scientific knowledge could be commanded, the groined vault, assisted by piers and buttresses, was gradually developed, and grew into the pointed arch. In process of time, a desire arose to give to the jambs and apertures destined for doors and windows, an appearance corresponding to their tall and slender dimensions, and to the shape of the pointed arch ; and the modifications, which before had been but partially seen, grew into general favour and estimation.

“ Struck by the combination of strength and lightness, loftiness and space, which this system afforded, artists began to follow up, from motives of elegance or vanity, that which had originated in causes of direct utility, and to make every support as slight and distant, every opening as high and wide, as possible.

“ For the sake of richness and harmony, the ribs, and ridge bands, and other parts forming the skeleton of the roof, were multiplied into the most complicated, and elegant, and bold tracery ; the openings of the windows, into the most subtle and variegated mullions and ramifications ; and the solid surfaces of the walls were covered with the most weblike tabernacle work.

“ The peculiar form acquired by the vault produced in it a tendency to divaricate and to push outwards the perpendicular internal supports ; and the oblique pressure applied to the upper parts of these came to be counteracted from below by a resistance equally oblique ; in other words, by carrying each of the leading arches of the vault, partly within and partly without the enclosing wall, in the shapes of buttresses detaching themselves from the main body of the building, thence called flying, by means of which these arches were continued in one uninterrupted curve from the summit of the edifice, to the remotest point of the foundation. The whole was completed by the application of those weights in the shape of pinnacles, which, by their vertical pressure, confined the diverging tendency of the arches, and reduced within bounds more limited the resting places of their outward supports.

“ If this account of the views and motives whence arose the alterations from the Lombard to the pointed style, drawn from those peculiar internal as well as external characteristics, which essentially distinguish the latter from the former, prove true and correct, if only a difference of situation and

climate produced those remodifications from the Lombard, which form the essential characteristics of the pointed architecture, we must acknowledge that the latter was superstructed upon, and arose, not out of a few mere arbitrary and ornamental shapes of the former, such as the interlacing of rounded arches and corbels, but out of the most universal principles of the rounded or Lombard style themselves, inasmuch as the arch, the vault, the groin, those essential ingredients of later architecture, already existed in the Lombard, were taken from it, and only prove that the peculiar local exigencies of more northern climates generated those further changes of form and subdivisions of parts, more directly adapted to the necessities and tastes of the countries in which that style was recomposed. In confirmation of our argument, we may remember that the same bodies of freemasons, who had designed and executed the former sacred buildings in the Lombard character, continued, under the influence of different latitudes and increased experience and science, to conceive and erect the new fabrics, as required by the taste of the later era. In short, we must allow that the latest pointed style, though resembling the interlacings of a gossamer web, the crystallisation of the hoarfrost in its most developed filigree form, in the total absence of strong and continued walls, and broad architraves, and lines extended horizontally, and expanding forms ; and, on the contrary, remarkable for perpendicular supports carried to a vast height and thinness, for immense windows, for wide and lofty vacant spaces in its arching, complicated in its high roofs and spires, broaches, and pinnacles, all sharp and spiky ; as different as possible from the Greek in appearance ; yet, through a number of intervening links of the earlier pointed, and rounded, and Byzantine, and ancient Roman styles, ultimately in a direct line and order of filiation, finds its origin in that ancient and primitive Greek architecture itself."

(To be continued.)

MISCELLANEOUS INTELLIGENCE.

ART. I. *Domestic Notices.*

ENGLAND.

BORRADAILE and Co.'s patent Felt for preventing the Transmission of Sound, &c. — What we call felt, there is every reason to suppose, is very much like, if not the same as, that which was known to the ancients under *lana coacta*. With them it served many useful purposes, such as cloaks for soldiers, corslets, and coverings for tents : by us, it is used chiefly for making hats ; and, although this same wool may be woven into cloth, or into kersey, yet, as Shakspeare said, —

" It were a delicate stratagem to shoe
A troop of horse with felt."

Ducange, in his *Dictionary*, tells us, perhaps, as much about it as we should gather from any other goodly folio ; and quotes a passage from Pliny, which imports that their felt consisted of a wool worked into a firm fabric, and was infused with vinegar. It does not seem that the ancients put it to that test which we have of late, in buildings, for checking the propagation of sound. The felt manufactured by Borradaile and Co. is found to do well, I believe, as *pugging* for deafening sound, either between the joists of stories, or in partitions. It has been adopted, but to answer different ends, at the Penitentiary, British Museum, National Gallery, New Post Office, and many other edifices, both public and private. — *Frederick Lush. July 19. 1838.*

The Architecture of Gin Palaces has been once or more the theme of satire in your pages ; nor is silence upon a topic of this nature wished for, seeing that they every where meet the eye, and that every man of taste would rather happen upon such as were the fair daughters of the goddess Beauty, than those of an opposite genus. We may hope, too, that these gin palaces, or

temples, as some have it, will pave the way for a better style in our metropolis; for it will be the aim of all who can to outvie their neighbours; so that, as long as this spirit of emulation is kept up, we may expect to find some new forms bodied forth; something which we shall either wonder at or admire; and on this score, no doubt, many, who have a love for art, are friendly to these gin palaces; although, looking to the morals of the common people, a great deal, of course, must be said against them. There is often to be seen in them good sense joined to taste, and an originality of thought, which one might look for in vain in works of a higher grade: indeed, these public haunts, as well as our new streets, have done much towards improving the architecture of our day; besides the subservient arts of decorative painting, letter-writing, carving, and general interior finishings; thus, as it has been truly said, "*there is some soul of goodness in things evil.*" I have observed in many that the yoke of precedent and authority, which so much fetters the genius of the architect, has been cast off: not that I consider the best models of antiquity should be lost sight of, or may be passed over as things unworthy of our attention; on the contrary, I think the more we depart from those standards of excellence, the further we stray from those paths which lead to eminence in the fine arts: but still, whenever an edifice gives us proofs of a creative mind, and bears a stamp of its own, it is sure to please, provided the three conditions of well-building (to borrow the language of Wotton) have been complied with; viz. commodity, firmness, and delight.

One fault, that is common in these gin palaces, as well as in buildings of higher pretensions, is the opposition of two extremes*; that is to say, a bare wall, or nearly so, is often brought to bear against another part or side which is, on the other hand, overcharged with ornament; a practice that always offends the eye of the judicious critic; because, without a unity of style, there can be no harmony in the composition, and, therefore, no beauty.

Perhaps there are very few, in the list of architects now living, who would risk their credit, as they might do, by fashioning a style to accord in a close degree with the nature and purposes of these buildings.† Yet it happens, by a strange fatality, that most of our buildings betray a want of fitness. What does well in one edifice is ill-suited to another, as regards the designment of the work. Whereas, throughout the whole range of our architecture, there obtains a monotony of style. With the ancients it was far otherwise. Seldom would a private citizen dare to employ the column with its appendages to his *own* abode. These beautiful parts of their orders the Grecians had such an exalted idea of, that they deemed them fit only for those edifices that were among the grandest or most sacred. — *Frederick Lush. Aug. 1838.*

Intended Improvements at Westminster.—A company has been formed, the object of which is to take down a nest of houses in a quarter of Westminster (lying between the Palace and Parliament Houses) which, owing to want of drainage, has sadly poisoned the lives of the poor who live thereabouts; where vice too, that was bred there, has long broken the peace and good order of such

* This is the case in the new addition to the Eagle Tavern, City Road, which, in spite of that glaring defect, when seen from one point of view, stands, may-be, foremost in buildings of this description. The chief façade has its lower part rusticated, capped with sailing-course and trusses under; above which are Corinthian columns with antæ at the quoins, supporting a bold entablature and balustrade: each side of the building is crowned in the centre by an *eagle*.

† There might be, for instance, such ornaments held forth to our gaze as would call to our mind, more than at present, that solace to sadness and balm of care, which the gaiety of feasting and mirth-making brings to the heart; in the drinking joys of Bacchus, and the blessings which he pours out; or our old father Noah, who first planted the vine, and tasted the juice of the grape, might live again in the memory, if there were a certain aptitude; which, however, it is far easier to conceive than actually apply.

places as neighbour that part of the metropolis.* Better streets, with squares, &c., are proposed in their stead. A company, that has such an end in view as this, is entitled to a share of our consideration; as by it are made more convenient thoroughfares, which improve not only this city of cities, but the moral estate of our fellow-creatures is improved also. Bardwell and Taylor are the architects whose names are attached to the plans of these intended alterations. — *Frederick Lush*. Aug. 9. 1838.

LEICESTERSHIRE. — *Ashby-de-la-Zouch new Church*. — The ceremony of laying the first stone of the new church at Ashby-de-la-Zouch (which was performed by the Earl Howe) took place on August 25. At four o'clock, those individuals who took part in the procession, together with a number of the friends of, and subscribers to, the intended structure, met, by previous notice, at the parish church, and soon after proceeded to the ground selected as the site of the new building. The procession, which was large, made a grand appearance. The church, which is now in the course of erection, is to be of stone, and consists of a nave 70 ft. by 46 ft. 6 in.; a recess at the east end 22 ft. by 9 ft., for the communion, flanked by a vestry and porch. The principal entrance is under the tower, which is 11 ft. square within, and 65 ft. high, with double rectangular buttresses, terminated by four lofty octangular pinnacles. The side entrances and staircases to the galleries are on the right and left of the tower, and correspond externally with the nave. The style of the church is early English, which is strictly preserved throughout; and it is capable of containing upwards of 900 persons. The contract for the erection does not exceed 2700l.; and it is expected to be completed by the latter end of next year. We hear that the liberality of a few individuals has suggested the addition of a spire, for which the design is well adapted; and we sincerely hope that so truly English a termination may not be abandoned for want of sufficient funds. (*Derby Mercury*, Aug. 29. 1838.)

SCOTLAND.

Colossal Statue at Golspie. — The gigantic statue in progress, to the memory of the late Duke of Sutherland, which is to crown the summit of the monument at Benraggie, is now nearly finished. The artist, Mr. Theakstone, has succeeded in forming an admirable likeness of the lamented nobleman; and, when all the parts of the statue are put together, its colossal dimensions (30 ft.), its elevated situation, and its imposing attitude, will render it a conspicuous landmark, as well as ornament, to that country which the duke did so much to cultivate and adorn. Temporary huts have been constructed on the top of the mountain for the workmen engaged in placing the statue; and in about a month the whole will be fixed and completed. (*Inverness Courier*, as quoted in the *Morn. Chron.* Aug. 28. 1838.)

ERRATUM. — In page 386. line 10. from bottom, for “chamber. The” read “chamber, the”; substituting a comma for the full stop after “chamber.”

* Every reflecting person must be aware of the great good that would result from *piercing* this nook in London. The bill of Sir Matthew Wood, Bart., however, for carrying that measure has been rejected in the House of Commons, on the ground of accomplishing it by *tontine*. But another bill, which has passed both houses of Parliament, for effecting an opening in the city, by making a way from Farringdon Street to the Great Northern Road, would be equally, if not more, beneficial than the former one, as respects the comforts and well-being of the lower classes of society, and the community at large.

THE ARCHITECTURAL MAGAZINE.

NOVEMBER, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *The Poetry of Architecture.* By KATA PHUSIN.

No. 3. THE VILLA. (Continued.)

IV. *The British Villa. The Cultivated, or Blue, Country. — Principles of Composition.*

IN the papers hitherto devoted to the investigation of villa architecture, we have contemplated the beauties of what may be considered as its model, in its original and natural territory ; and we have noticed the difficulties to be encountered in the just erection of villas in England. It remains only to lay down the general principles of composition, which, in such difficulties, may, in some degree, serve as a guide. Into more than general principles it is not consistent with our plan to enter. One obstacle, which was more particularly noticed, was, as it may be remembered, the variety of the geological formations of the country. This will compel us to use the divisions of landscape formerly adopted in speaking of the cottage, and to investigate severally the kind of domestic architecture required by each.

First. Blue or cultivated country, which is to be considered as including those suburban districts, in the neighbourhood of populous cities, which, though more frequently black than blue, possess the activity, industry, and life, which we before noticed as one of the characteristics of blue country. We shall not, however, allude to suburban villas at present ; first, because they are in country possessing nothing which can be spoiled by any thing ; and, secondly, because their close association renders them subject to laws which, being altogether different from those by which we are to judge of the beauty of solitary villas, we shall have to develope in the consideration of street effects.

Passing over the suburb, then, we have to distinguish between the *simple* blue country, which is composed only of rich cultivated champaign, relieved in parts by low undulations, monotonous and uninteresting as a whole, though cheerful in its character, and beautiful in details of lanes and meadow paths ; and the *picturesque* blue country, lying at the foot of high hill ranges, intersected by their outworks, broken here and there into bits of crag and dingle scenery ; perpetually presenting prospects of

exquisite distant beauty, and possessing, in its valley and river scenery, fine detached specimens of the natural "green country." This distinction we did not make in speaking of the cottage; the effect of which, owing to its size, can extend only over a limited space; and this space, if in picturesque blue country, must be either part of its monotonous cultivation, when it is to be considered as belonging to the simple blue country, or part of its dingle scenery, when it becomes green country; and it would not be just, to suit a cottage, actually placed in one colour, to the general effect of another colour, with which it could have nothing to do. But the effect of the villa extends very often over a considerable space, and becomes part of the large features of the district; so that the whole character and expression of the visible landscape must be considered, and thus the distinction between the two kinds of blue country becomes absolutely necessary. Of the first, or simple, we have already adduced, as an example, the greater part of the south of England. Of the second, or picturesque, the cultivated parts of the North and East Ridings of Yorkshire, generally Shropshire, and the north of Lancashire, and Cumberland, beyond Caldbeck Fells, are good examples; perhaps better than all, the country for twelve miles north, and thirty south, east, and west, of Stirling.

Now, the matter-of-fact business-like activity of simple blue country has been already alluded to. This attribute renders in it a plain palpable brick dwelling-house allowable; though a thing which, in every country but the simple blue, compels every spectator of any feeling to send up aspirations, that builders who, like those of Babel, have brick for stone, may be put, like those of Babel, to confusion. Here, however, it is not only allowable, but even agreeable, for the following reasons: —

Its cleanness and freshness of colour, admitting of little dampness or staining, firm in its consistence, not mouldering like stone, and therefore inducing no conviction of antiquity or decay, presents rather the appearance of such comfort as is contrived for the enjoyment of temporary wealth, than of such solidity as is raised for the inheritance of unfluctuating power. It is thus admirably suited for that country where all is change, and all activity; where the working and money-making members of the community are perpetually succeeding and overpowering each other; enjoying, each in his turn, the reward of his industry; yielding up the field, the pasture, and the mine, to his successor, and leaving no more memory behind him, no farther evidence of his individual existence, than is left by a working bee, in the honey for which we thank his class, forgetting the individual. The simple blue country may, in fact, be considered the dining-table of the nation; from which it provides for its immediate necessities, at which it feels only its present existence, and in

which it requires, not a piece of furniture adapted only to remind it of past refection, but a polished, clean, and convenient minister to its immediate wishes. No habitation, therefore, in this country, should look old: it should give an impression of present prosperity, of swift motion and high energy of life; too rapid in its successive operation to attain greatness, or allow of decay, in its works. This is the first cause which, in this country, renders brick allowable.

Again, wherever the soil breaks out in simple blue country, whether in the river shore, or the broken road-side bank, or the ploughed field, in nine cases out of ten it is excessively warm in its colour, being either gravel or clay, the black vegetable soil never remaining free of vegetation. The warm tone of these beds of soil is an admirable relief to the blue of the distances, which we have taken as the distinctive feature of the country, tending to produce the perfect light without which no landscape can be complete. Therefore the red of the brick is prevented from glaring upon the eye, by its falling in with similar colours in the ground, and contrasting finely with the general tone of the distance. This is another instance of the material which nature most readily furnishes being the right one. In almost all blue country, we have only to turn out a few spadefuls of loose soil, and we come to the bed of clay, which is the best material for the building; whereas we should have to travel hundreds of miles, or to dig thousands of feet, to get the stone which nature does not want, and therefore has not given.

Another excellence in brick is its perfect air of English respectability. It is utterly impossible for an edifice altogether of brick to look affected or absurd: it may look rude, it may look vulgar, it may look disgusting, in a wrong place; but it cannot look foolish, for it is incapable of pretension. We may suppose its master a brute, or an ignoramus, but we can never suppose him a coxcomb: a bear he may be, a fop he cannot be; and, if we find him out of his place, we feel that it is owing to error, not to impudence; to self-ignorance, not to self-conceit; to the want, not the assumption, of feeling. It is thus that brick is peculiarly English in its effect: for we are brutes in many things, and we are ignorami in many things, and we are destitute of feeling in many things, but we are *not* coxcombs. It is only by the utmost effort, that some of our most highly gifted junior gentlemen can attain such distinction of title; and even then the honour sits ill upon them: they are but awkward coxcombs. Affectation* never was, and never will be, a part of English

* The nation, indeed, possesses one or two interesting individuals, whose affectation is, as we have seen, strikingly manifested in their lake villas: but every rule has its exceptions; and, even on these gifted personages, the affectation sits so very awkwardly, so like a velvet bonnet on a ploughman's car-

character : we have too much national pride, too much consciousness of our own dignity and power, too much established self-satisfaction, to allow us to become ridiculous by imitative efforts ; and, as it is only by endeavouring to appear what he is not, that a man ever can become so, properly speaking, our true-witted Continental neighbours, who shrink from John Bull as a brute, never laugh at him as a fool. “ Il est bête, il n'est pas pourtant sot.”

The brick house admirably corresponds with this part of English character ; for, unable as it is to be beautiful, or graceful, or dignified, it is equally unable to be absurd. There is a proud independence about it, which seems conscious of its own entire and perfect applicability to those uses for which it was built, and full of a good-natured intention to render every one who seeks shelter within its walls excessively comfortable : it therefore feels awkward in no company ; and, wherever it intrudes its good-humoured red face, stares plaster and marble out of countenance, with an insensible audacity, which we drive out of such refined company, as we would a clown from a drawingroom, but which we nevertheless seek in its own place, as we would seek the conversation of the clown in his own turnip field, if he were sensible in the main.

Lastly. Brick is admirably adapted for the climate of England, and for the frequent manufacturing nuisances of English blue country : for the smoke, which makes marble look like charcoal, and stucco like mud, only renders brick less glaring in its colour ; and the inclement climate, which makes the composition front look as if its architect had been amusing himself by throwing buckets of green water down from the roof, and before which the granite base of Stirling Castle is mouldering into sand as impotent as ever was ribbed by ripple, wreaks its rage in vain upon the bits of baked clay, leaving them strong, and dry, and stainless, warm and comfortable in their effect, even when neglect has permitted the moss and wallflower to creep into their crannies, and mellow into something like beauty that which is always comfort. Damp, which fills many stones as it would a sponge, is defied by the brick ; and the warmth of every gleam of sunshine is caught by it, and stored up for future expenditure ; so that, both actually and in its effect, it is peculiarly suited for a climate whose changes are in general from bad to worse, and from worse to bad.

roty hair, that it is evidently a late acquisition. Thus, one proprietor of land on Windermere, who has built unto himself a castellated mansion with round towers, and a Swiss cottage for a stable, has yet, with that admiration of the “ neat but not gaudy,” which is commonly reported to have influenced the devil when he painted his tail pea-green, painted the rocks at the back of his house pink, that they may look clean. This is a little outcrop of English feeling in the midst of the assumed romance.

These, then, are the principal apologies which the brick dwelling-house has to offer for its ugliness. They will, however, only stand it in stead in the simple blue country; and, even there, only when the following points are observed.

First. The brick should neither be of the white, nor the very dark red, kind. The white is worse than useless as a colour: its cold, raw, sandy, neutral has neither warmth enough to relieve, nor grey enough to harmonise with, any natural tones; it does not please the eye by warmth, in shade; it hurts it, by dry heat in sun; it has none of the advantages of effect which brick may have, to compensate for the vulgarity which it must have, and is altogether to be abhorred. The very bright red, again, is one of the ugliest warm colours that art ever stumbled upon: it is never mellowed by damp or any thing else, and spoils every thing near it by its intolerable and inevitable glare. The moderately dark brick, of a neutral red, is to be chosen, and this, after a year or two, will be farther softened in its colour by atmospheric influence, and will possess all the advantages we have enumerated. It is almost unnecessary to point out its fitness for a damp situation, not only as the best material for securing the comfort of the inhabitant, but because it will the sooner contract a certain degree of softness of tone, occasioned by microscopic vegetation, which will leave no more brick-red than is agreeable to the feelings where the atmosphere is chill.

Secondly. Even this kind of red is a very powerful colour; and as, in combination with the other primitive colours, very little of it will complete the light, so, very little will answer every purpose in landscape composition, and every addition, above that little, will be disagreeable. Brick, therefore, never should be used in large groups of buildings, where those groups are to form part of landscape scenery: two or three houses, partly shaded with trees, are all that can be admitted at once. There is no object more villanously destructive of natural beauty, than a large town, of very red brick, with very scarlet tiling, very tall chimneys, and very few trees; while there are few objects that harmonise more agreeably with the feeling of English ordinary landscape, than the large, old, solitary, brick manor house, with its group of dark cedars on the lawn in front, and the tall wrought-iron gates opening down the avenue of approach.

Thirdly. No stone quoining, or presence of any contrasting colour, should be admitted. Quoins, in general (though, by the by, they are prettily managed in the old Tolbooth of Glasgow, and some other antique buildings in Scotland), are only excusable as giving an appearance of strength; while their zigzag monotony, when rendered conspicuous by difference of colour, is altogether detestable. White cornices, niches, and the other superfluous introductions in stone and plaster, which some archi-

fects seem to think ornamental, only mock what they cannot mend, take away the whole expression of the edifice, render the brick-red glaring and harsh, and become themselves ridiculous in isolation. Besides, as a general principle, contrasts of extensive colour are to be avoided in all buildings, and especially in positive and unmanageable tints. It is difficult to imagine whence the custom of putting stone ornaments into brick buildings could have arisen; unless it be an imitation of the Italian custom of mixing marble with stucco, which affords it no sanction, as the marble is only distinguishable from the general material by the sharpness of the carved edges. The Dutch seem to have been the originators of the custom; and, by the by, if we remember right, in one of the very finest pieces of colouring now extant, a landscape by Rubens (in the gallery at Munich, we think), the artist seems to have sanctioned the barbarism, by introducing a brick edifice, with white stone quoining. But the truth is, that he selected the subject, partly under the influence of domestic feelings, the place being, as it is thought, his own habitation; and partly as a piece of practice, presenting such excessive difficulties of colour, as he, the lord of colour, who alone could overcome them, would peculiarly delight in overcoming; and the harmony with which he has combined tints of the most daring force, and sharpest apparent contrast, in this edgy building, and opposed them to an uninteresting distance of excessive azure (simple blue country, observe), is one of the chief wonders of the painting: so that this masterpiece can no more furnish an apology for the continuance of a practice which, though it gives some liveliness of character to the warehouses of Amsterdam, is fit only for a place whose foundations are mud, and whose inhabitants are partially animated cheeses, than Caravaggio's custom of painting blackguards should introduce an ambition among mankind in general of becoming fit subjects for his pencil. We shall have occasion again to allude to this subject, in speaking of Dutch street effects.

Fourthly. It will generally be found to agree best with the business-like air of the blue country, if the house be excessively simple, and apparently altogether the minister of utility; but, where it is to be extensive, or tall, a few decorations about the upper windows are desirable. These should be quiet and severe in their lines, and cut boldly in the brick itself. Some of the minor streets in the King of Sardinia's capital are altogether of brick, very richly charged with carving, with excellent effect, and furnish a very good model. Of course, no delicate ornament can be obtained, and no classical lines can be allowed; for we should be horrified by seeing that in brick which we have been accustomed to see in marble. The architect must be left to his own taste for laying on, sparingly and carefully, a few disposi-

tions of well-proportioned line, which are all that can ever be required.

These broad principles are all that need be attended to in simple blue country : anything will look well in it which is not affected ; and the architect, who keeps comfort and utility steadily in view, and runs off into no expatiations of fancy, need never be afraid here of falling into error.

But the case is different with the picturesque blue country.* Here, owing to the causes mentioned in the notes at p. 300., we have some of the most elevated bits of landscape character, which the country, whatever it may be, can afford. Its first and most distinctive peculiarity is its grace ; it is all undulation and variety of line, one curve passing into another with the most exquisite softness, rolling away into faint and far outlines of various depth and decision, yet none hard or harsh ; and, in all probability, rounded off in the near ground into massy forms of partially wooded hill, shaded downwards into winding dingles or cliffy ravines, each form melting imperceptibly into the next, without an edge or angle.

Its next character is mystery. It is a country peculiarly distinguished by its possessing features of great sublimity in the distance, without giving any hint in the foreground of their actual nature. A range of mountain, seen from a mountain peak, may have sublimity, but not the mystery with which it is invested, when seen rising over the farthest surge of misty blue, where every thing near is soft and smiling, totally separated in nature from the consolidated clouds of the horizon. The picturesque blue country is sure, from the nature of the ground, to present some distance of this kind, so as never to be without a high and ethereal mystery.

The third and last distinctive attribute is sensuality. This is a startling word, and requires some explanation. In the first place, every line is voluptuous, floating, and wavy in its form ; deep, rich, and exquisitely soft in its colour ; drowsy in its effect, like slow, wild music ; letting the eye repose on it, as on a wreath of cloud, without one feature of harshness to hurt, or of contrast to awaken. In the second place, the cultivation, which, in the simple blue country, has the forced formality of growth which evidently is to supply the necessities of man, here seems to leap into the spontaneous luxuriance of life, which is fitted to minister to his pleasures. The surface of the earth exults with animation, especially tending to the gratification of the senses ; and, without the artificialness which reminds man of the necessity of his own labour, without the opposing influences which call

* In leaving simple blue country, we hope it need hardly be said that we leave bricks at once and for ever. Nothing can excuse them out of their proper territory.

for his resistance, without the vast energies that remind him of his impotence, without the sublimity that can call his noblest thoughts into action, yet, with every perfection that can tempt him to indolence of enjoyment, and with such abundant bestowal of natural gifts, as might seem to prevent that indolence from being its own punishment, the earth appears to have become a garden of delight, wherein the sweep of the bright hills, without chasm or crag, the flow of the bending rivers, without rock or rapid, and the fruitfulness of the fair earth, without care or labour on the part of its inhabitants, appeal to the most pleasant passions of eye and sense, calling for no effort of body, and impressing no fear on the mind. In hill country we have a struggle to maintain with the elements; in simple blue, we have not the luxuriance of delight: here, and here only, all nature combines to breathe over us a lulling slumber, through which life degenerates into sensation.

These considerations are sufficient to explain what we mean by the epithet "sensuality." Now, taking these three distinctive attributes, the mysterious, the graceful, and the voluptuous, what is the whole character? Very nearly — the Greek: for these attributes, common to all picturesque blue country, are modified in the degree of their presence by every climate. In England, they are all low in their tone; but, as we go southward, the voluptuousness becomes deeper in feeling, as the colours of the earth and the heaven become purer and more passionate, and "the purple of ocean deepest of dye;" the mystery becomes mightier, for the greater and more universal energy of the beautiful permits its features to come nearer, and to rise into the sublime, without causing fear. It is thus that we get the essence of the Greek feeling, as it was embodied in their finest imaginations, as it showed itself in the works of their sculptors and their poets, in which sensation was made almost equal with thought, and deified by its nobility of association; at once voluptuous, refined, dreamily mysterious, infinitely beautiful. Hence, it appears that the spirit of this blue country is essentially Greek; though, in England and in other northern localities, that spirit is possessed by it in a diminished and degraded degree. It is also the natural dominion of the villa, possessing all the attributes which attracted the Romans, when, in their hours of idleness, they lifted the light arches along the echoing promontories of Tiber. It is especially suited to the expression of the edifice of pleasure; and, therefore, is most capable of being adorned by it. The attention of every one about to raise himself a villa of any kind should, therefore, be directed to this kind of country; first, as that in which he will not be felt to be an intruder; secondly, as that which will, in all probability, afford him the greatest degree of continuous pleasure, when his eye has become accustomed to

the features of the locality. To the human mind, as on the average constituted, the features of hill scenery will, by repetition, become tiresome, and of wood scenery, monotonous; while the simple blue can possess little interest of any kind. Powerful intellect will generally take perpetual delight in hill residence; but the general mind soon feels itself oppressed with a peculiar melancholy and weariness, which it is ashamed to own; and we hear our romantic gentlemen begin to call out about the want of society, while, if the animals were fit to live where they have forced themselves, they would never want more society than that of a grey stone, or of a clear pool of gushing water. On the other hand, there are few minds so degraded as not to feel greater pleasure in the picturesque blue than in any other country. Its distance has generally grandeur enough to meet their moods of aspiration; its near aspect is of a more human interest than that of hill country, and harmonises more truly with the domestic feelings which are common to all mankind; so that, on the whole, it will be found to maintain its freshness of beauty to the habituated eye, in a greater degree than any other scenery.

As it thus persuades us to inhabit it, it becomes a point of honour not to make the attractiveness of its beauty its destruction; especially as, being the natural dominion of the villa, it affords great opportunity for the architect to exhibit variety of design.

Its spirit has been proved to be Greek; and therefore, though that spirit is slightly manifested in Britain, and though every good architect is shy of importation, villas on Greek and Roman models are admissible here. Still, as in all blue country there is much activity of life, the principle of utility should be kept in view, and the building should have as much simplicity as can be united with perfect gracefulness of line. It appears from the principles of composition alluded to in speaking of the Italian villa, that in undulating country the forms should be square and massy; and, where the segments of curves are small, the buildings should be low and flat, while they may be prevented from appearing cumbrous by some well-managed irregularity of design, which will be agreeable to the inhabitant as well as to the spectator; enabling him to change the aspect and size of his chamber, as temperature or employment may render such change desirable, without being foiled in his design, by finding the apartments of one wing matched, foot to foot, by those of the other. For the colour, it has been shown that white or pale tints are agreeable in all blue country: but there must be warmth in it, and a great deal too, grey being comfortless and useless with a cold distance; but it must not be raw nor glaring.* The

* The epithet "raw," by the by, is vague, and needs definition. Every tint is raw which is perfectly opaque, and has not all the three primitive colours

roof and chimneys should be kept out of sight as much as possible ; and, therefore, the one very flat, and the other very plain. We ought to revive the Greek custom of roofing with thin slabs of coarse marble, cut into the form of tiles. However, where the architect finds he has a very cool distance, and few trees about the building, and where it stands so high as to preclude the possibility of its being looked down upon, he will, if he be courageous, use a very flat roof of the dark Italian tile. The eaves, which are all that should be seen, will be peculiarly graceful ; and the sharp contrast of colour (for this tiling can only be admitted with white walls) may be altogether avoided, by letting them cast a strong shadow, and by running the walls up into a range of low garret windows, to break the horizontal line of the roof. He will thus obtain a bit of very strong colour, which will impart a general glow of cheerfulness to the building, and which, if he manages it rightly, will not be glaring or intrusive. It is to be observed, however, that he can only do this with villas of the most humble order, and that he will seldom find his employer possessed of so much common sense as to put up with a tile roof. When this is the case, the flat slabs of the upper limestone (ragstone) are usually better than slate.

For the rest, it is always to be kept in view, that the prevailing character of the whole is to be that of graceful simplicity ; distinguished from the simplicity of the Italian edifice, by being that of utility instead of that of pride.* Consequently, the building must *not* be Gothic or Elizabethan : it may be as commonplace as the proprietor likes, provided its proportions be good ; but nothing can ever excuse one acute angle, or one decorated pinnacle, both being direct interruptions of the repose with which

in its composition. Thus, black is always raw, because it has no colour ; white never, because it has all colours. No tint can be raw which is not opaque ; and opacity may be taken away, either by actual depth and transparency, as in the sky ; by lustre and texture, as in the case of silk and velvet, or by variety of shade, as in forest verdure. Two instances will be sufficient to prove the truth of this. Brick, when first fired, is always raw ; but, when it has been a little weathered, it acquires a slight blue tint, assisted by the grey of the mortar : incipient vegetation affords it the yellow. It thus obtains an admixture of the three colours, and is raw no longer. An old woman's red cloak, though glaring, is never raw ; for it must, of necessity, have folded shades : those shades are of a rich grey : no grey can exist without yellow and blue. We thus have three colours, and no rawness. It must be observed, however, that, when any one of the colours is given in so slight a degree, that it can be overpowered by certain effects of light, the united colour, when opaque, will be raw. Thus, many flesh-colours are raw ; because, though they must have a little blue in their composition, it is too little to be efficiently visible in a strong light.

* There must always be a difficulty in building in picturesque blue country in England ; for the English character is opposed to that of the country : it is neither graceful, nor mysterious, nor voluptuous ; therefore, what we cede to the country, we take from the nationality, and *vice versâ*.

the eye is indulged by the undulations of the surrounding scenery. Tower and fortress outlines are, indeed, agreeable, from their fine grouping and roundness ; but we do not allude to them, because nothing can be more absurd than the humour prevailing at the present day among many of our peaceable old gentlemen, who never smelt powder in their lives, to eat their morning muffin in a savage-looking round tower, and admit quiet old ladies to a tea-party under the range of twenty-six cannon, which, it is lucky for the china, are all wooden ones, as they are, in all probability, accurately and awfully pointed into the drawingroom windows.

So much, then, for our British blue country, to which it was necessary to devote some time, as occupying a considerable portion of the island, and being peculiarly well adapted for villa residences. The woody, or green country, which is next in order, was spoken of before, and was shown to be especially our own. The Elizabethan was pointed out as the style peculiarly belonging to it ; and farther criticism of that style was deferred until we came to the consideration of domestic buildings provided with the means of defence. We have, therefore, at present only to offer a few remarks on the principles to be observed in the erection of Elizabethan villas at the present day.

First. The building must be either quite chaste, or excessively rich in decoration. Every inch of ornament short of a certain quantity will render the whole effect poor and ridiculous ; while the pure perpendicular lines of this architecture will always look well if left entirely alone. The architect, therefore, when limited as to expense, should content himself with making his oriels project boldly, channeling their mullions richly, and, in general, rendering his vertical lines delicate and beautiful in their workmanship ; but, if his estimate be unlimited, he should lay on his ornament richly, taking care never to confuse the eye. Those parts to which, of necessity, observation is especially directed, must be finished so as to bear a close scrutiny, that the eye may rest on them with satisfaction : but their finish must not be of a character which would have attracted the eye by itself, without being placed in a conspicuous situation ; for, if it were, the united attraction of form and detail would confine the contemplation altogether to the parts so distinguished, and render it impossible for the mind to receive any impression of general effect. Consequently, the parts that project, and are to bear a strong light, must be chiseled with infinite delicacy ; so that the ornament, though it would have remained unobserved had the eye not been guided to it, when observed, may be of distinguished beauty and power ; but those parts which are to be flat, and in shade, should be marked with great sharpness and boldness, that the impression may be equalised. When, for instance, we have

to do with oriels, to which attention is immediately attracted by their projection, we may run wreaths of the finest flowered-work up the mullions, charge the terminations with shields, and quarter them richly; but we must join the window to the wall, where its shadow falls, by means of more deep and decided decoration.

Secondly. In the choice and design of his ornaments, the architect should endeavour to be grotesque rather than graceful (though little bits of soft flower-work here and there will relieve the eye); but he must not imagine he can be grotesque by carving faces with holes for eyes and knobs for noses; on the contrary, wherever he mimics grotesque life, there should be wit and humour in every feature, fun and frolic in every attitude; every distortion should be anatomical, and every monster a studied combination. This is a question, however, relating more nearly to Gothic architecture, and, therefore, we shall not enter into it at present.

Thirdly. The gables must, on no account, be jagged into a succession of right angles, as if people were to be perpetually engaged in trotting up one side and down the other. This custom, though sanctioned by authority, has very little apology to offer for itself, based on any principle of composition. In street effect, indeed, it is occasionally useful; and, where the verticals below are unbroken by ornament, may be used even in the detached Elizabethan, but not when decoration has been permitted below. They should then be carried up in curved lines, alternating with two angles, or three at the most, without pinnacles or hip-knobs. A hollow parapet is far better than a battlement, in the intermediate spaces; the latter, indeed, is never allowable, except when the building has some appearance of being intended for defence, and, therefore, is generally barbarous in the villa, while the parapet admits of great variety of effect.

Lastly: Though the grotesque of Elizabethan architecture is adapted for wood country, the grotesque of the clipped garden, which frequently accompanies it, is not. The custom of clipping trees into fantastic forms is always to be reprehended: first, because it never can produce the true grotesque, for the material is not passive, and, therefore, a perpetual sense of restraint is induced, while the great principle of the grotesque is action; again, because we have a distinct perception of two natures, the one neutralising the other; for the vegetable organisation is too palpable to let the animal form suggest its true idea; again, because the great beauty of all foliage is the energy of life and action, of which it loses the appearance by formal clipping; and again, because the hands of the gardener will never produce anything really spirited or graceful. Much, however, need not be

said on this subject; for the taste of the public does not now prompt them to such fettering of fair freedom, and we should be as sorry to see the characteristic vestiges of it, which still remain in a few gardens, lost altogether, as to see the thing again becoming common.

The garden of the Elizabethan villa, then, should be laid out with a few simple terraces near the house, so as to unite it well with the ground; lines of balustrade along the edges, guided away into the foliage of the taller trees of the garden, with the shadows falling at intervals. The balusters should be square rather than round, with the angles outwards; and, if the balustrade looks unfinished at the corners, it may be surmounted by a grotesque bit of sculpture, of any kind; but it must be very strong and deep in its carved lines, and must not be large; and all graceful statues are to be avoided, for the reasons mentioned in speaking of the Italian villa: neither is the terraced part of the garden to extend to any distance from the house, nor to have deep flights of steps, for they are sure to get mossy and slippery, if not superintended with troublesome care; and the rest of the garden should have more trees than flowers in it. A flower-garden is an ugly thing, even when best managed: it is an assembly of unfortunate beings, pampered and bloated above their natural size, stewed and heated into diseased growth; corrupted by evil communication into speckled and inharmonious colours; torn from the soil which they loved, and of which they were the spirit and the glory, to glare away their term of tormented life among the mixed and incongruous essences of each other, in earth that they know not, and in air that is poison to them.

The florist may delight in this: the true lover of flowers never will. He who has taken lessons from nature, who has observed the real purpose and operation of flowers; how they flush forth from the brightness of the earth's being, as the melody rises up from among the moved strings of the instrument; how the wildness of their pale colours passes over her, like the evidence of a various emotion; how the quick fire of their life and their delight glows along the green banks, where the dew falls the thickest, and the low mists of incense pass slowly through the twilight of the leaves, and the intertwined roots make the earth tremble with strange joy at the feeling of their motion; he who has watched this will never take away the beauty of their being to mix into meretricious glare, or to feed into an existence of disease. And the flower-garden is as ugly in effect as it is unnatural in feeling: it never will harmonise with anything, and, if people will have it, should be kept out of sight until they get into it. But, in laying out the garden which is to assist the effect of the building, we must observe, and exclusively use, the

natural combinations of flowers.* Now, as far as we are aware, bluish purple is the only flower colour which nature ever uses in masses of distant effect; this, however, she does in the case of most heathers, with the *Rhododéndron ferrugíneum*, and, less extensively, with the colder colour of the wood hyacinth. Accordingly, the large rhododendron may be used to almost any extent, in masses; the pale varieties of the rose more sparingly; and, on the turf, the wild violet and pansy should be sown by chance, so that they may grow in undulations of colour, and should be relieved by a few primroses. All dahlias, tulips, ranunculi, and, in general, what are called florist's flowers, should be avoided like garlic.

Perhaps we should apologise for introducing this in the *Architectural Magazine*; but it is not out of place: the garden is almost a necessary adjunct of the Elizabethan villa, and all garden architecture is utterly useless unless it be assisted by the botanical effect.

These, then, are a few of the more important principles of architecture, which are to be kept in view in the blue and in the green country. The wild, or grey, country is never selected, in Britain, as the site of a villa; and, therefore, it only remains for us to offer a few remarks on a subject as difficult as it is interesting and important, the architecture of the villa in British hill, or brown, country.

* Every one who is about to lay out a limited extent of garden, in which he wishes to introduce many flowers, should read and attentively study, first Shelley, and next Shakspeare. The latter, indeed, induces the most beautiful connexions between thought and flower that can be found in the whole range of European literature; but he very often uses the symbolical effect of the flower, which it can only have on the educated mind, instead of the natural and true effect of the flower, which it must have, more or less, upon every mind. Thus, when Ophelia, presenting her wild flowers, says, "There's rosemary, that's for remembrance; pray you love, remember: and there is pansies, that's for thoughts:" the infinite beauty of the passage depends upon the arbitrary meaning attached to the flowers. But, when Shelley speaks of

— "The lily of the vale,
Whom youth makes so fair, and passion so pale,
That the light of her tremulous bells is seen
Through their pavilion of tender green,"

he is etherealising an impression which the mind naturally receives from the flower. Consequently, as it is only by their natural influence that flowers can address the mind through the eye, we must read Shelley, to learn how to use flowers, and Shakspeare, to learn to love them. In both writers we find the wild flower possessing soul as well as life, and mingling its influence most intimately, like an untaught melody, with the deepest and most secret streams of human emotion.

ART. II. *Horæ Architectonicæ*; or, *Rough Notes on Architectural Subjects.* By NEMO.

NO. 1. ARCHITECTURAL NOMENCLATURE.

NOTHING tends to give greater facility in the attainment of any art or science, than a clear and distinct definition of the terms employed. Precision of idea is essential to the proper comprehension of any subject; without it, whatever labour we may bestow, however we may task our mental faculties, instead of a well-defined picture being presented to the mind, we shall obtain nothing but a vague shadowy resemblance, which gives no satisfaction, and tends to no improvement. For want of attention to this, how frequently do we find that two disputants, after expending torrents of eloquence and oceans of ink, raising clouds of argumentative dust, much to the annoyance of the peaceably disposed, have all the while meant the same thing. The fable of the knights and the golden and silver shield is often enough enacted in our own day; with this difference, that the object in dispute, in place of having two sides, has frequently only one.

In every science, technical terms, and the application of words in a conventional sense, different from their ordinary acceptation, are more or less necessary; not only to avoid circumlocution, but to give expression to new ideas and combinations, which the progress of knowledge continually brings to light. In the sciences of chemistry, botany, geology, political economy, and, indeed, in every branch of physical and mental philosophy, the greatest minds have given their earnest attention to the establishment of an expressive and intelligible nomenclature; convinced that, in doing so, they were rendering an essential service to the science to which they were devoted.* Whether architecture be an art or a science, or both, it is to be regretted that so little attention has hitherto been paid to fixing the precise meaning of the terms employed; so that the same word shall always convey the same idea, without ambiguity, particularly in the historical and æsthetical study of the art. In the constructive department, necessity has enforced something approaching to uniformity. The term "classical," for instance, as applied to architecture, is sometimes restricted to the antique Greek and Roman; at other times, it includes its bastard Italian offspring; and, again, it is used in reference to all architecture, both ancient and modern, erected

* In many sciences, indeed, the nomenclature is still far from being perfect; different writers using different terms and modes of classification, which become to a student very perplexing. An amusing instance occurred lately within my own observation, of two philosophers disputing with considerable warmth respecting the presence of certain fossils in the primitive strata; when it turned out that both parties meant the same thing; one using the classification of Lyell, the other that of Phillips.

on the principles of the “orders.” The designation “Elizabethan” is applied indifferently to two modes of building, not merely distinct, but entirely dissimilar, in their character; the one with the sunk mouldings, the depressed arches, the peaked and crocketed gables of the early part of the sixteenth century; and the other displaying columns and entablatures of half a dozen orders in the same building, with fantastic scroll gables, and retaining nothing of the preceding style but the huge mullioned windows. In fact, to say that a building is to be erected in the “Elizabethan style,” conveys to the mind of an architect no definite idea; as some of those who submitted designs for the new houses of Parliament will, if I mistake not, have cause to remember.

No term connected with architecture has been tortured into a greater variety of meaning than the word “*style*.” In its original acceptation, strictly an architectural term (*stulos*, an upright pillar or column), it became applied, first, to an implement for writing, and metaphorically to the peculiarities of the writers using it. Thence, by an easy transition, it was employed to designate the varieties of oratory, music, painting, and sculpture; and, after making the tour of the sciences, it is again pressed into the service of architecture, with a meaning entirely different from that with which it set out. In its primitive sense, it is still used in compound words, describing the details and arrangements of architecture, as *enstyle*, *distyle*, *peristyle*, *stylobate*, &c.; but, in its secondary and general sense, it is sometimes applied to the modes of building adopted by different nations, as the Egyptian, the Greek, the Roman style. Mr. Hosking uses it as synonymous with the term “order;” and frequently, in architectural criticism, we meet with the phrases, a meagre style, a gorgeous style, a light and elegant style, &c. We also read of the several styles of Michael Angelo, Inigo Jones, Wren, Vanbrugh, &c. When the same word is employed in such a great variety of significations, it is quite impossible but that some mistakes and confusion of ideas should occur. In fact, were most persons asked to give a concise definition of architectural style, very few would be able to give one much more satisfactory than that of the sage Linkum Fidelius, as quoted in *Salmagundi*: — “Style is — *style*.”

The meaning which ought to attach to the word seems obvious enough on a little consideration. An architectural design should bear stamped on its front the impress of its author’s mind. The architect’s notions of beauty, of fitness, of character, as applicable to the particular building, are, or ought to be, displayed in every line. The particular species of architecture which is made use of for the purpose is merely the medium through which these ideas are conveyed; the language, as it were, in

which the artist speaks. In this point of view, the analogy between expression in architecture and literary composition is exceedingly close. Now, in reference to the latter, we never commit the absurdity of confounding the language in which an author writes, with his peculiar cast of thought and turns of expression. We say that the style of Johnson is pompous, that of Gibbon majestic, that of Goldsmith easy and flowing, that of Addison elegant; but we do not say that Milton wrote in the English style, and Voltaire in the French style: why, then, should we use the same term to describe the materials with which an architect works, and the use which he makes of them? To all this it may be replied, that we have no word which could be used exactly as an equivalent, in either of the senses above alluded to. Supposing it were so, we have only to do as our progenitors have done before us in similar circumstances, to make a suitable word. I think, however, that, without much difficulty, expressions already in existence might be found sufficient for all the purposes required. The word "mode" or manner, though not strictly naturalised as an architectural term, is not unfrequently applied to the different classes or species of architecture, as the Grecian mode, the Roman mode, &c. In this sense, it is every way preferable to the word "style," as being liable to no misconception, and conveying at once, and intelligibly, the idea intended; that is, the manner of building practised by the Greeks, the Romans, &c. Style, applied to architectural composition, would then mean precisely what it does applied to literary composition, the adaptation of certain expressions to produce a certain effect.

The term "order," though used less vaguely, and liable to fewer misconceptions than the term "style," has yet a certain tendency to mislead the unwary. When we read of the "five orders," particularly in most of the elementary works on architecture, we are instructed that each order has certain definite and fixed proportions, which it cannot pass. Every subdivision, nay, every moulding, is to be arranged with the most scrupulous nicety by certain rules, which, we are told, the ancients adhered to. "An order," says Dean Aldrich, in his *Elements of Civil Architecture*, "is the graceful symmetry of a pillar, with its adjuncts, restrained by fixed bounds;" which "fixed bounds" he proceeds to extract from the treatises of Vitruvius and Palladio. When the student afterwards begins to compare these rules with the actual examples in the delineations of Stuart, Taylor, Cressy, and others, he finds, to his astonishment, in place of the "fixed bounds" to which he has been restricted, that the ancients indulged in the most unbounded latitude, both of proportion and ornament. Some specimens he finds without a frieze, others without an architrave. We have a difference of at least a diameter and a half in the general proportions of each order.

Indeed, from the remains at Corinth, in which the column is four diameters in height, to the temple of Jupiter Tonans at Rome, in which it is ten diameters and a quarter high, we find no two examples exactly alike, either in detail or proportion. Still, the idea of fixed rules connected with the term “order” maintains its ground and, I have little doubt, is one cause of the servile system of copying peculiar to modern architecture. This mischief we owe principally to the celebrated treatise of Vitruvius, and the writings of his followers. Had his manuscript been burnt before it had been discovered by Poggio, the world, in my opinion, would have been no loser, and, certainly, modern architecture would have been a great gainer.* The term “order” is sometimes used to describe the various species of temples; as the prostyle, dipteral, &c. Sometimes it is used synonymously with style, to describe general modes of architecture, as the “Gothic order.”

By the way, speaking of Gothic architecture, since its modern revival it has been singularly unfortunate in its search for a name. Christian architecture, English architecture, pointed architecture, architecture of the middle ages, have all been zealously contended for as peculiarly appropriate denominations. But, as if in illustration of the poetical maxim, that “the evil that men do lives after them,” the contemptuous epithet “Gothic,” first, I believe, applied by Evelyn, or some writer of his day, seems likely to survive all the other appellations. As honest Fluellen observes, “there is occasions and causes why and wherefore in all things;” so, I suppose, the term is generally considered as appropriate as any of the others. For my own part, I consider the name a very good generic appellation; and, when subdivided into the round and pointed arch modes, is sufficiently expressive for all practical purposes. In the judicious subdivisions of Mr. Rickman, into early, decorated, and perpendicular, we find the everlasting word (as brother Jonathan would call it) “style” again thrust upon us. Why these divisions should not be called “orders,” as well as the subdivisions of Greek architecture, it would be difficult, perhaps, to show; but, in England at least, we can be at no loss for an appropriate epithet: the progressive changes in architecture having been simultaneous in the whole island, the term “period” is at once the most correct and descriptive, and admits of a precision which no other term could convey.

* I never could divine what particular information was to be derived from the treatise of Vitruvius, beyond the mere gratification of antiquarian curiosity. If some meddling monk of the middle ages had written a treatise on church-building, filled with legends and fables, describing existing buildings as they were *not*, and fixing exact rules for the heights and widths of piers, arches, the details of mouldings, &c., would the practice of modern Gothic architecture have been much facilitated?

But it is time I should bring these rambling observations to a close. My readers may ask the very natural question, *Cui bono*? To what do all these remarks tend? Supposing these discrepancies to exist which you have pointed out, where is the remedy? I would reply, that the first step towards the correction of an evil is to point out its existence, and the inconveniences resulting from it; and, surely, in these days of reform and renovation, in an age which prides itself on precision and correctness in its tone and habits of thought, a reformation so simple as that of calling things by their right names cannot be of very difficult attainment. I perceive the secretary of the Institute has very judiciously written an article on the discrepancy of architectural notation, as exhibited by different writers, and in common practice; and I cannot but think that, if the subject touched upon above were taken up in the same quarter, the influence and weight with which such a recommendation would necessarily come, might go far towards an effectual remedy. In my next paper, I may probably enter upon a somewhat kindred subject.

Sept. 24. 1838.

ART. III. *Are Architectural Monuments only to be erected among Architectural Objects?* By W.

FROM reading the articles in your valuable Magazine, on the Poetry of Architecture, I have been induced to bring before your notice a principle, about which the editor of a journal here, and I, were at issue some time ago. As the shortest mode of explaining the principle, I cannot do better than refer you to the correspondence which was inserted in the *Edinburgh Evening Courant*, of the 2d and 5th of April last; but, lest you should not have the papers at hand, I shall transcribe the two letters, and the editorial remarks.

"Site for Sir Walter Scott's Monument. — To the Editor of the Courant.

SIR, It was well remarked by a writer who advocated the original obelisk design, 'that Sir W. Scott's monument should obviously be one of the first objects to arrest the attention of any traveller on first coming within sight of our romantic town.' It is evident, to effect this object, the site should be within view from the principal approach to the town; it should also, in my opinion, be in some measure associated with the scenes celebrated in the author's works. Both of these objects may be obtained by adopting a situation I have long had in view, viz. the knoll on which the ruins of St. Anthony's Chapel stand. The very conspicuous appearance which these trifling ruins have shows the prominent nature of the situation: indeed, Grose says it was selected for St. Anthony's Chapel from its prominence; as, according to tradition, it was erected for the purpose of offering up prayers for mariners who might be in danger on the sea. Grose says, 'This situation was undoubtedly chosen with an intention of attracting the notice of seamen coming up the Firth, who, in cases of danger, might be induced to make vows to the tutelar saint.' There can be no doubt that a monument placed on this situation would be well seen in approaching the city from the south, either by

land or sea; it would also form a conspicuous object from the Calton Hill, North Bridge, &c.

"Again, how appropriate, when we reflect how highly interesting the scenes in this neighbourhood are rendered by the author of *Waverley*. 'The Ruins,' the trysting place of his heroic Jeanie Deans, immediately over Mushat's Cairn, near to the termination of that beautiful walk so much praised by Sir Walter, looking down on the ancient palace of Scotia's kings. Altogether, there is not a spot which calls forth so much interesting association of ideas.

"It might be objected: Would you destroy these beautiful ruins for the purpose of obtaining a site? No; I would render them ten times more attractive. On examining the spot, it will be found that there is ample space for a monument to the south of them, and which could be placed so as to appear quite distinct and unconnected with them. The lofty nature of the surrounding scenery might be started as an objection to the site. I grant that a building in a light style of architecture would have a crushed appearance; though Gothic would be in bad taste here: indeed, from the Gothic being generally adopted for ecclesiastical buildings, and most appropriate for such, a monument, in this style, however beautiful as a work of art, is apt to impress the mind, especially if seen from a distance, with being part of a church: such, at all events, would be the effect in the proposed situation, taken in connexion with the ruins.

"A monument, however, consisting of a massive piece of architecture, combined with a colossal statue, would well accord with the surrounding scenery, and meet the views of those who consider it indispensable that it should consist of both architecture and sculpture.

"There is another inducement for selecting this situation, that, while apart from the multifarious buildings of a town, it is at no inconvenient distance for strangers, who are inclined to visit it; the access is good, and its proximity to the palace would naturally lead them to prolong their walk or ride to the spot. I say *ride*, for it would be no difficult task to form a drive to nearly the summit of the rising ground. Again, when arrived at the spot, besides the monument, the splendid view from it would amply repay the walk.

"Again, were the interior of the building fitted up, and the walls adorned with sculpture in *basso relievo* of subjects taken from the works of the author, this would form an additional inducement for visiting the spot, and which would appear more valuable in the eyes of a stranger from having to travel a short distance, than if placed in the most central point of Edinburgh. These pieces of sculpture would give ample scope for the genius of native talent.

I am, &c. — W."

"(We have inserted the above, though we really cannot agree with the views of the writer, which appear very *outré*. There would neither be propriety nor good taste in fixing on the spot which he recommends for the proposed monument. There is a manifest incongruity in placing works of art amid the bold scenery of nature. Nelson's Pillar on the Calton Hill is a living monument of this enormity. A warning, certainly, but not an example. The finish of art does not harmonise with the rude sublimity of nature; and it is only in streets and elegant squares, where all the objects are in the same keeping, that architectural ornaments or statues can be seen with advantage: every thing else is tasteless confusion; a vain attempt to force together objects which cannot be combined, that are each marked by their own peculiar and distinct beauties, but that cannot reflect beauty on each other.)" (*Edinb. Courant*, April 2. 1838.)

"Monument to Sir Walter Scott. — To the Editor of the *Courant*.

"SIR, Allow me to observe, in reference to the opinion you expressed regarding the site I suggested for Sir W. Scott's monument, that the idea of

combining works of art with the sublimity of nature is neither *outré* nor without precedent from the best authorities. The architecture of Nelson's Monument has long been the subject of animadversion; but I believe it is the first time the propriety of the situation for a monumental building has ever been called in question: indeed, its noble situation is its only redeeming quality. But, if Nelson's Monument is an example of the absurdity of combining the finish of art with the rude sublimity of nature, Dugald Stewart's Monument must be equally so; than which, view it from any point, there is not a more beautiful object. Burns's Monument, near Ayr, is another specimen of the finest classical architecture, combined with the sublimest of Nature's scenery. Why was this situation selected in preference to Wellington Square, in Ayr? for the same reason that I have suggested the site of St. Anthony's Ruins for Sir W. Scott's monument; viz., that there Burns had laid the scenery of his interesting poem of 'Tam o' Shanter,' on the banks of 'Bonny Doon,' immediately opposite the ruins of Alloway Kirk. There was lately erected in Strathearn an obelisk to the memory of Sir David Baird, on the summit of the hill called Thom-o-hastel, amidst the most wild and romantic scenery. Not to multiply examples, the monument erected about two years since, to the late Duke of Sutherland, is another case in point. It is placed on the top of the mountain Benevraigie, situated in the wildest part of Sutherlandshire. The monument is a massive pillar of granite, I believe designed by Mr. Burn, to be surmounted by a colossal statue from the chisel of the far-famed Chantrey. I am, &c. — W." (*Ib.*, April 5. 1838.)

The question as to the best situation for Sir Walter Scott's monument cannot be generally interesting, as it is only those who are acquainted with the locality who can form an opinion upon it; but the propriety of combining works of art, under certain circumstances, with the sublimity of nature, is a question on which all can judge; and in this I feel desirable to have your opinion.

You are aware that the plan of Sir W. Scott's monument was long the subject of discussion, and you are probably aware that at length the committee resolved to adopt a certain design, *leaving the question as to the site quite open*; in consequence of this resolution, the sub-committee find themselves, I believe, as much at a loss to decide on the site as they were on the design, and with this difficulty, that they must find a site *suitable to a particular design*. I confess I was astonished that it did not form a *sine quâ non* with the committee, that the choice of a design and a site should be simultaneous; that, in fact, the one should be appropriate to the other. On this subject, the writer on the Poetry of Architecture in your Magazine very justly remarks, p. 342. : —

"We have always considered these circumstances as most remarkable proofs of the perfect dependence of architecture on its situation, and of the utter impossibility of judging of the beauty of a building in the abstract."

In judging of the appropriateness of situation for a monument, we should be guided by the peculiar features in the character of the individual to whose memory it is raised. Thus, a monument to one who has rendered essential service in the public

affairs of a city, I should say, would be most appropriately placed in the peculiar locality of that city which was associated with the characteristics of the deceased. Again, as to such an author as Sir Walter Scott, whose fort lay in unveiling native manners and scenery, the most appropriate site for a monument to his memory would be amidst the scenes where some of his favourite works were laid. Edinburgh is peculiarly fortunate in having in its vicinity the scene of one of his most interesting tales; and I would ask, whether the stranger who has been attracted to Scotland by the fame of Sir W. Scott, would contemplate with the same pleasure a monument to his memory placed (say) in Charlotte Square, as was at one time proposed, where not a single iota exists to call forth one idea in connexion with the deceased, as he would do while retiring from Scotia's Royal Palace, his mind by a thousand recollections carried back to scenes portrayed by Sir Walter. He contemplates a solemn and majestic monument, raised not only amidst the scenes of his tales, but where much of his youthful life was spent, and where he developed to his school companions the first outpourings of his poetical genius.

As to the incongruity of works of art and the sublimity of nature, as I have already observed, this depends on the nature and design of the building: it affords, I think, a pleasing association of ideas to meet with some handsome monumental building (say the mausoleum of the family) in some sequestered spot, abounding with nothing but nature's scenery. I remember well my feelings when first the monument to Burns, in Ayrshire (to which allusion has already been made), burst upon my view, placed in the most beautiful and romantic scenery.

Edinburgh, Sept. 4. 1838.

[WE will not run the risk of prejudicing any of our readers at present, by any observations of our own; but rather beg the favour of Kata Phusin to let our readers have his opinion on the subject, which we certainly think of considerable importance. Are we to conclude, from the editor of the *Courant's* remarks in p. 500., that the placing of the obelisk described in the next article on the summit of a mountain, far from any other architectural object, is in bad taste? On the contrary, will the effect not be greatly heightened by the contrast between the work of art and the natural scenery by which it is surrounded?—*Cond.*]

ART. IV. *A Method of Building an Obelisk without Scaffolding, as adopted by T. Slacks of Langholm.* From the "Transactions of the Society of Arts" for 1837, by Permission of the Committee of Correspondence and Papers.

"MR. SLACKS's apparatus was used, for the first time, in erecting an obelisk of handsome white sandstone, 100 ft. high, not including its foundation, on the summit of Whitaw, a mountain overlooking the town of Langholm, in the district of Eskdale, Dumfriesshire, which was built by subscription, in honour of the late Major-General Sir John Malcolm, G.C.B., K.L.S., &c., a native of that district.

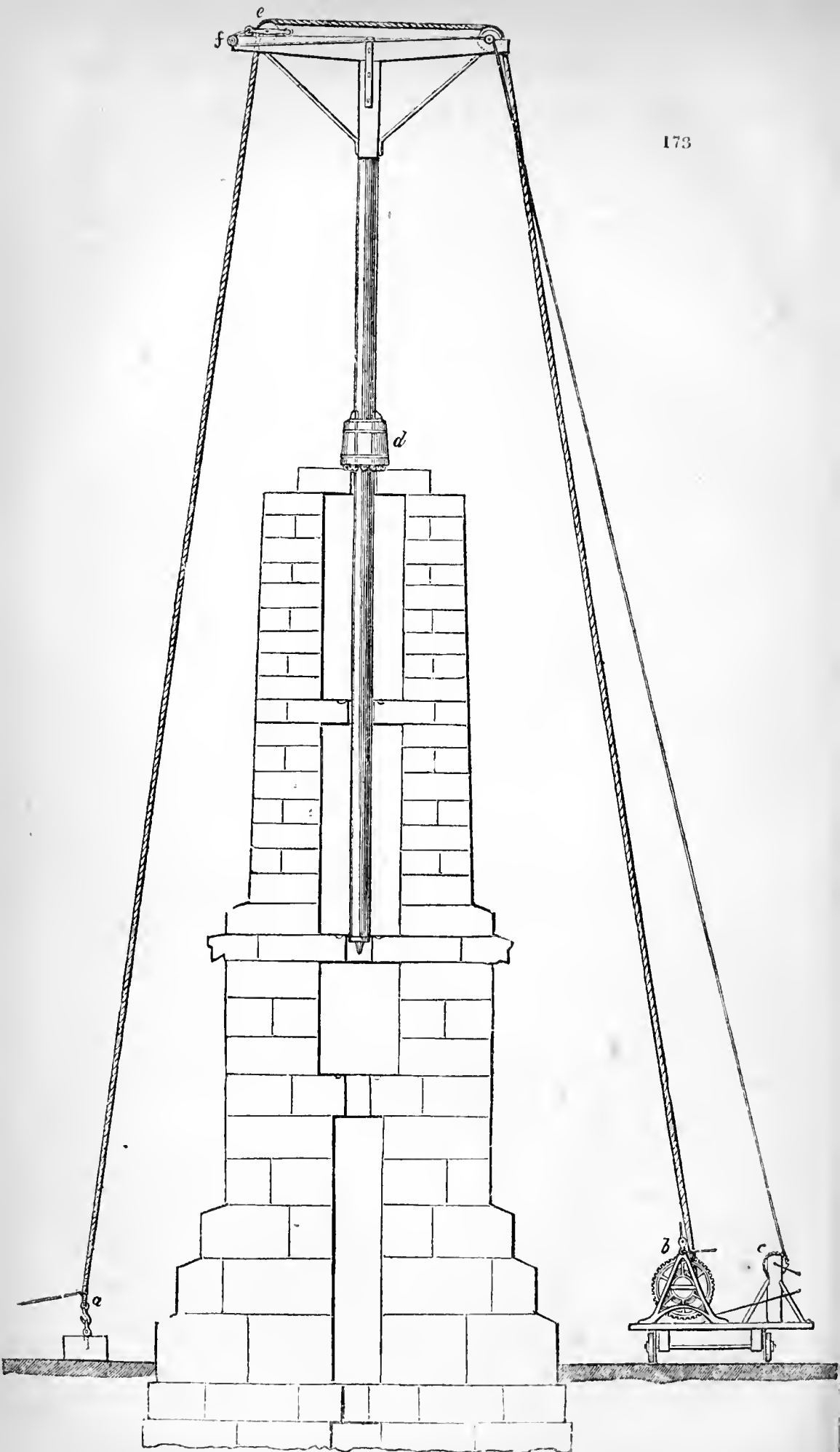
“Colonel C. W. Pasley, Director of the Royal Engineer Establishment, at Chatham, was appointed by the committee of management to employ an architect, or other competent person, to prepare a design and working drawings for the obelisk, which was done, at his request, by Mr. Robert Howe, clerk of works, and professor of practical architecture at the said establishment; and having decided, pursuant to the advice of Mr. Burn, an eminent architect of Edinburgh, that the obelisk should be built hollow, with thorough bond-courses at intervals; the drawings and a specification were put into the hands of some respectable masons of Langholm, who offered to execute the work by contract, at an expense not exceeding the funds at the disposal of the committee of management, provided that they could obtain permission to cut holes of 10 in. in diameter in the centre of each of the thorough bond-courses; as they stated, that by means of these holes they would be enabled to raise their materials in a new mode, which would be a great deal cheaper, and not less efficient, than the usual system of scaffolding. To this trifling deviation from the original plan, which would not injure the stability of the work, Colonel Pasley and the committee immediately assented; and, in consequence, the simple and ingenious machinery, which forms the subject of this paper, was brought into use.

“*General Description of the Machinery.* (*fig. 173.*) — A pole with a cross-beam at top, in the form of the capital letter T, erected in the centre of the masonry, whilst in progress, answered the purpose of a crane for lifting the stones and other materials, which were hooked on to the fall of a rope, at *a* (*fig. 173.*), which passed over the top of the beam, and from thence was led down to a crab (*b*) on the other side of the obelisk, capable of raising five tons with ease. This crab, and a small windlass (*c*), were placed on a carriage, having four iron wheels, with axles converging towards the centre of a circular railway surrounding the base of the obelisk, upon which this carriage moved.

“*Pole.* — The pole was 40 ft. long, and 10 in. in diameter, and was kept upright in the centre of the obelisk, by means of the holes in the three thorough bond-courses, as shown in *fig. 173.*; the two lowest of which served as stays, whilst the uppermost supported its whole weight, bearing a collar of hard wood (*d*), which embraced the pole, and was so firmly bolted to it, that it formed an integral part of it. Between the collar and the thorough bond-course immediately below it, seventeen balls, each $3\frac{1}{2}$ in. in diameter, were introduced, to enable the pole to turn round with ease in all directions; and the under surface of the collar, as well as the upper surface of the thorough bond-course, were each prepared with a circular groove, to suit the form and guide the motion of these balls.

“*First Position of the Pole.* — A hole, 2 ft. square, was left in the foundation, at the bottom of which a large stone had been previously placed, supporting a block of hard wood, with a small hole cut in the centre of it for afterwards receiving the gudgeon at the bottom of the pole, which was lowered down and stepped in the aforesaid block by means of a pair of shears, after the masonry had been raised a little higher than the surface of the ground, the foundation being rather more than 10 ft. deep. In this portion, the pole turned upon its own gudgeon, as a pivot, when required, until the masonry was raised to the level proper for placing the thorough bond-course in the die of the pedestal, upon which course the pole was made to rest, by means of the collar and balls before described; and, as the work proceeded, it rested upon every new thorough bond-course in regular succession, being raised for this purpose from time to time, in the manner that will afterwards be described.

“*Cross-Beam.* — The cross-beam was about 12 ft. long, and 12 in. square in the centre, where it was mortised down upon the head of the pole, and from thence tapered upwards on both sides. It was further strengthened and connected with the pole by two strong iron braces, one from each end of it, and by an iron strap passing over the top and down both sides of the pole; this strap, as well as the braces, being secured by transverse screw-bolts driven through the pole. (*fig. 173.*) The arm of this beam nearest to the crab was



solid; but, on the other side, at the distance of 18 in. from the centre, a vertical groove was cut through the wood to within $2\frac{1}{2}$ in. of the end, which was strengthened by an iron hoop and screw-bolt. Over this groove a sort of railway was formed, by two iron rods placed on different sides of it, upon which a small cast-iron carriage (*e*), 20 in. in length, travelled, by means of wheels 4 in. in diameter. The stones were hooked on to the fall of the lifting rope of this sort of crane by means of lewises. This rope, which, at its other end, communicated with the crab, passed over two iron wheels at contrary ends of the cross-beam, each 10 in. in diameter, one hung near the solid end of it, in a mortise cut for the purpose, the other in the centre of the small iron carriage, the movements of which it participated, in order that the stones or other materials raised by the rope might be brought further from or nearer to the centre of the masonry, as required. This matter was regulated as follows:—

“Two small ropes made fast to the outer ends of the carriage, passed round two small cast-iron pulleys (*f*), fixed outside of the adjacent end of the beam, and from thence passed over two similar pulleys, fixed outside of the other end of the beam (*fig. 173.*); and, at some distance lower, these two ropes were united into one, and led down to the small windlass (*c*), placed on the same carriage with the crab. On winding up this rope round the barrel of the windlass as far as it will go, the carriage is made to travel out upon its little railway to the extreme end of the beam; and, if the rope be now made fast, the carriage is prevented from moving. Consequently, when a stone is raised by the crab, under these circumstances, it is kept out to the greatest possible distance from the centre of the masonry; but, if the windlass rope be slacked, the weight of the stone, in being raised by the crab, forces the carriage to move towards the middle of the beam, and, consequently, the stone is itself brought nearer to the centre of the masonry.

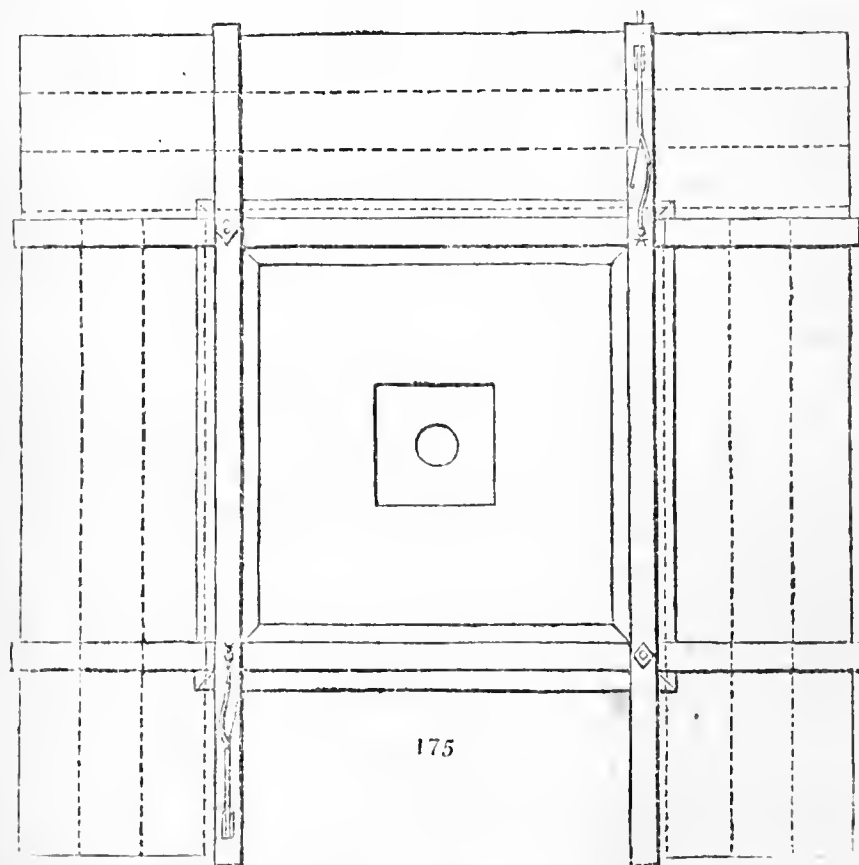
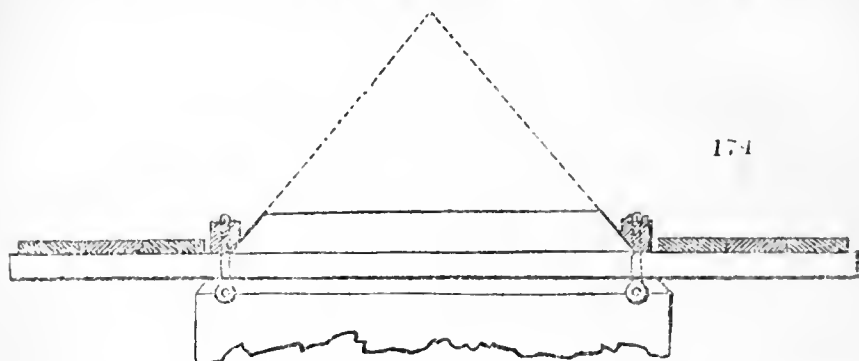
“The workmen were also raised and lowered by the crab, after putting one foot into a loop at the end of the rope. Whilst being lowered, a man always stood at the break of the crab, who allowed them to descend rapidly, but without acceleration.

“*Mode of raising the Pole to a higher Level.*—This was always done after the masonry had been carried up by the above apparatus about 10 ft. higher than the thorough bond-course on which the collar rested for the time being; that is, as soon as a new thorough bond-course was to be placed. Two half trestles were then set up on different sides of the pole, upon the last finished course of masonry, having a semicircular hole in the top of each; after which they were connected, by four strong iron screw-bolts, into one complete trestle, with its cap embracing the pole. Two planks were then placed transversely in the same alignment, but on contrary sides of the pole, each having its upper end resting on the cap of the trestle near the pole, and its lower end projecting over the sides of the masonry; and, to prevent them from separating, these planks were chained together at the head. Near to each end of these planks was hung a cast-iron pulley, about 4 in. in diameter, so that two of these pulleys were near the pole on contrary sides of it, whilst the two others projected a little way beyond the outside of the masonry.

“The rope used for raising the pole and beam was passed through a hole in the former, a little above the collar, and the middle of it being brought to this point, the ends of the rope were led up along the two opposite sides of the pole, and passed over the pulleys in the planks; from whence they were led down respectively to the crab on one side, and to a windlass on the other side, of the base of the obelisk. The winches of both, being carefully and regularly worked at the same time, raised the pole the whole height necessary, by means of the upper pair of pulleys in those two planks; whilst the lower ones prevented the rope from rubbing against the masonry. The balls were then extracted from below, which was accomplished with ease by means of a spring forceps, made of hoop iron, and having a handle 9 ft. long. The new thorough bond-stones, which had previously been laid towards the outside of the obelisk, were then moved inwards by crow bars, until they met; after which they

were cramped together, and the balls placed as before in the circular groove prepared for them, and then the pole was lowered a little, till the collar rested on the balls, which being done, the trestle was taken to pieces and removed, and the whole thorough bond-course completed, and the work proceeded as before. The whole time consumed by raising the pole and beam to a higher level, in the manner that has been described, did not exceed two hours.

"Hanging Scaffold for finishing the Top of the Obelisk. (figs. 174. and 175.)
 — When the work had attained the height of 95 ft., and the first sloping



course of stones forming the base of the pyramidal apex of the obelisk had been placed, a light hanging scaffold was formed, consisting of four strong wooden bearers, each $12\frac{1}{2}$ ft. long, fitted to the slopes of the said course, and bolted together at four points, so as to form a square frame, having its ends projecting about 3 ft. each way beyond the outside of the masonry. Planks were bolted down upon these projecting ends on three sides of the frame, but the fourth had a pulley attached to it for a rope and bucket, by which the workmen were to be drawn up and let down. This scaffold was held down

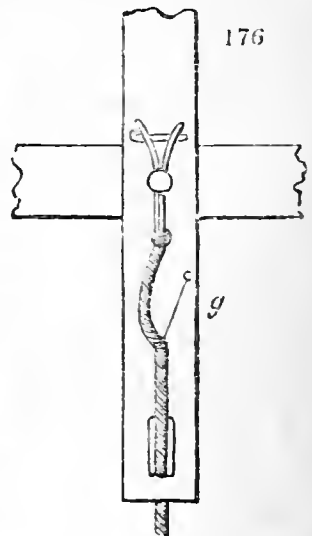
and kept in its proper position by a pair of guy-ropes made fast below, on contrary sides of the obelisk, each branching out into two parts at top, like the capital letter Y, in order to act upon all the angles of the frame.

“Mode of removing the Pole and Cross-Beam.”—As soon as the hanging scaffold was completed, all the materials necessary for finishing the remainder of the work were got up and piled upon it; after which, the upper part of the pole, having the cross-beam attached to it, was sawed off, and lowered down to the ground below, whilst the lower part of the pole was left standing, and is now buried within the masonry.

“Mode of removing the hanging Scaffold.”—The four bearers composing the frame of this scaffold, were fixed together by four bolts, as before stated, each of which was fitted as an eye-bolt for receiving a rope at its lower end. Two of these bolts, at opposite angles, were screw-bolts, but the two others, at the alternate angles of the frame, were slip-bolts with their upper ends keyed, and the head of each of these keys was provided with a ring for receiving a rope, and at their other ends, they themselves, were secured by a second pair of smaller keys, as shown in *fig. 176*.

“After the masonry was finished, the planks of the scaffold were disengaged and lowered down; and at the same time ropes were made fast to the eyes of the four bolts, and to the rings of the two principal keys, the former being led straight down to the base of the obelisk, but the latter being first passed in a horizontal direction over pulleys at the ends of two of the bearers. The ropes from the bolts were passed through snatch-blocks, near the base of the obelisk, and from thence led out to such a distance, that they might be acted upon by a windlass, without danger to the men. These preparations being taken, one active mason, who remained the last, disengaged the second pair of small keys from the first, and then descended by the bucket; after which, the two principal keys were drawn out by means of the ropes fixed to their rings, as before described. The slip-bolts were then pulled out, by acting in like manner on the ropes attached to them.* This being done, the four bearers ceased to form a connected frame, being separated into two parts, each part consisting of two pieces of wood, held together at right angles to each other, in the form of an irregular cross, by their respective screw-bolts. The ropes attached to these bolts were then acted upon, and the parts of the scaffold pulled down, which descended along two opposite angles, without injuring the masonry; for the projecting cornice, which was the most exposed part of it, had previously been covered with sods, and further protected by eight long poles, leaning against the sides of the shaft above it.

“Mr. Thomas Slacks, the inventor of the above ingenious arrangements, is an operative mason, who was previously employed as foreman of masons under the able engineer of the Carlisle and Newcastle railway, in constructing a remarkably fine skew-bridge over the small river Gelt, in Cumberland, in which the machine called a Hercules was used. Mr. Slacks states that he took the idea of



* Two small lines, one of which is shown at *g*, in *fig. 176*., were used in a very ingenious manner, to relieve these keys from the weight of their own ropes, which, if not thus counteracted, might have drawn them before the proper time, with great danger to the mason who remained last on the scaffold. As soon as this man had descended, these small lines, which had just sufficient strength to prevent an accident of this kind, were broken by a strong pull of the windlass, acting upon the key-ropes, by which the keys themselves were at the same time extracted.

his own machinery solely from the Hercules, which he modified by changing a straight into a radiating movement. It will be seen, however, that the principle adopted by him is much more similar to that of the balance-crane used by Mr. Stevenson more than twenty years' ago, in the erection of his justly celebrated work, the Bell Rock Lighthouse. Hence, in recommending Mr. Slacks to the favourable notice of the Society of Arts, the writer of this article has no wish to claim for him the merit of priority of invention, so far as regards the principle of his machinery. But it is hoped that the following observations will show that Mr. Slacks's arrangements involve a considerable practical improvement upon the balance-crane. That very ingenious machine was constructed entirely of iron, of the very best workmanship; and the whole of the wheels, pinions, &c., acting upon it, formed an integral part of the crane itself, which was erected first upon the solid part of the masonry, and afterwards in each of the successive chambers of the lighthouse, previously to their being covered in. This machine could not have been used in the Malcolm Obelisk at all, because the hollow spaces allowed in the centre of that work were much too small to admit it; besides which, the expense of such a machine would have far exceeded the funds at the disposal of the managing committee. In fact, it is much too costly ever to be used at all, except in very important and arduous works, where nothing simpler will answer equally well, and where expense is a secondary object. Mr. Slacks's crane, on the contrary, was of the cheapest and simplest possible form, consisting chiefly of a larch tree, cut in the neighbouring woods, and a short piece of square timber, besides some other very simple wood-work, iron-work, and ropes. In respect to his machinery, it consists of a crab and small windlass, such as every builder must necessarily be provided with, and which, by not forming an integral part of his crane, but being entirely separated from it, saves superfluous expense; and, so far as regarded the peculiar nature of the Malcolm Obelisk, this arrangement also, was much more convenient, since, by being worked from below, the machinery as well as the men employed at it, were entirely out of the way of the masons whilst in the act of building. Moreover, by placing his crab below, Mr. Slacks gets rid of the necessity of using a suspended and movable weight as a counterpoise to the materials raised, which is so very essential a part of the balance-crane, that it has derived its name from it. In short, instead of that very ingenious but expensive machine, which certainly was much better adapted for the work of the Bell Rock Lighthouse than any other that could have been used, but which is only capable of being made by first-rate ironfounders and machinists, Mr. Slacks has contrived an apparatus no less efficient for the purpose he had in view, but infinitely cheaper, and so much simpler, that the same might be fitted up by common country carpenters and blacksmiths in any part of the United Kingdom, or of the British colonies. In respect to his arrangements for finishing the work by the hanging scaffold fixed upon the first course of the pyramidal apex of the obelisk, which scaffold was taken to pieces from below after all the workmen had descended, this part of his plan is still more ingenious, if possible, than the former, and appears to be perfectly original.

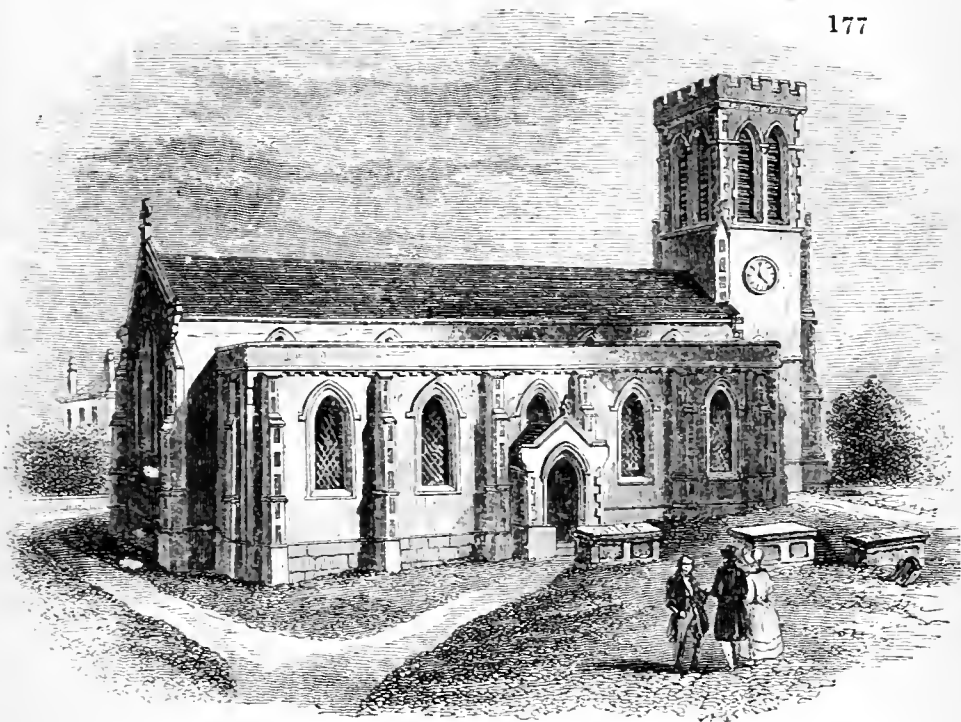
"By the process that has been described, this obelisk was executed, without the smallest accident, in rather less than twelve months, in a manner highly creditable to the contractors, and satisfactory to the committee by whom they were employed." (*Trans. Soc. Arts.*, vol. li. p. 89.)

[Working drawings of Mr. Slacks's apparatus are in the possession of the Society of Arts, and will, doubtless, be shown to any architect or builder wishing for farther information on the subject.]

ART. V. *Notice of the new Church at Charmouth, lately erected from the Designs of Charles Fowler, Architect, F.I.B.A., &c.* Communicated by Mr. FOWLER.

THIS church, of which *fig. 177.* shows the elevation, is calculated to contain six hundred sittings, of which part are to be

177



free. The walls are constructed chiefly of flints, with a portion of blue lias stone, used only in the internal parts, and the outer facing is of flints, in random courses, closely fitted, and pointed with grey mortar. The quoins, cornices, copings, and all other wrought work, are of a whitish freestone, from the quarries at Beer, on the Devonshire coast; and, by its contrast with the brown tints of the flint-work, produces an agreeable effect.

It was first decided, contrary to my wish, to have the exterior plastered, and the wrought stone was set with a projection, to allow for the thickness (as it still remains, and without appearing unsightly); but, having had a portion of wall filled in at all the interstices with small stones, and neatly pointed, by way of specimen, the result was so satisfactory, as to determine at once that the whole should be so done: the consequence is, the obtaining an imperishable surface of a rich brown tint, instead of a factitious commonplace one of stucco, which would have been dependent upon the taste and liberality of future churchwardens and parishioners, for preserving its neatness by periodical colouring, &c.

The foundations are formed of concrete, composed of five

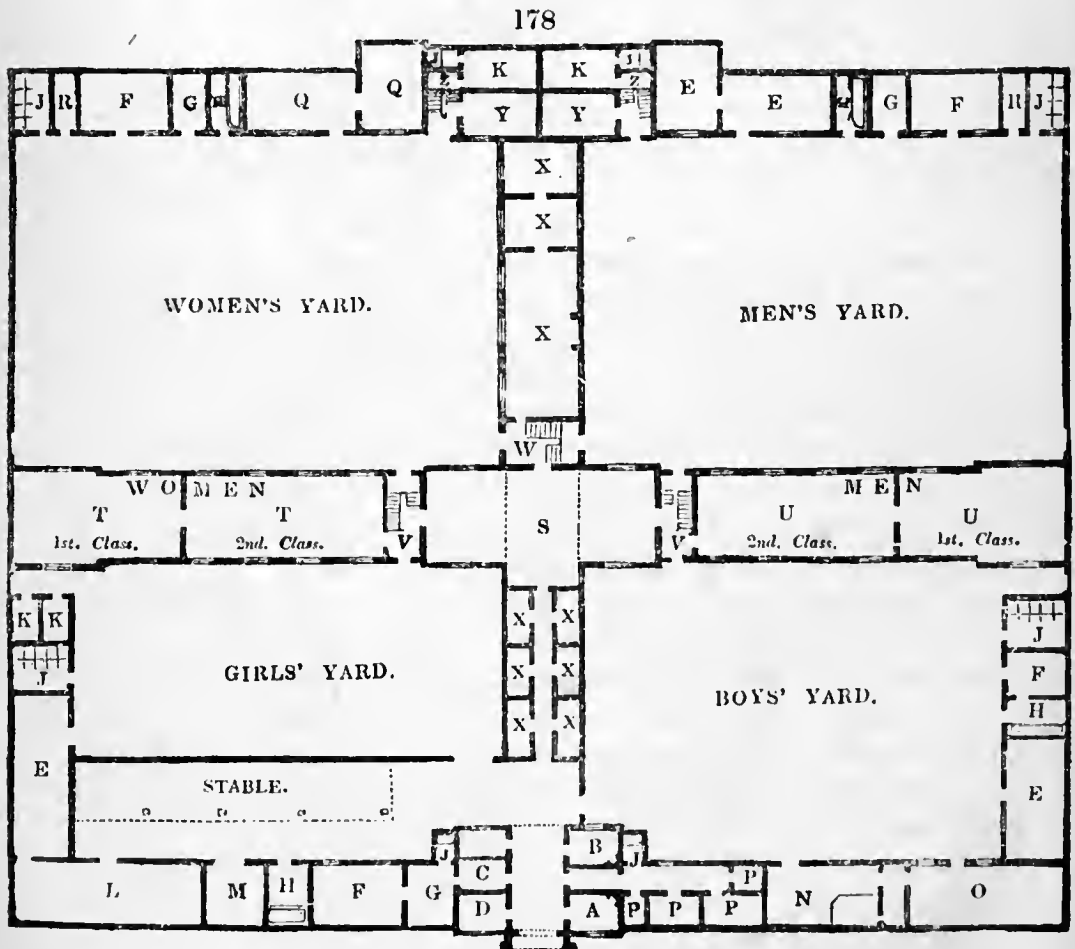
parts of gravel from the beach, and one part of blue lias lime, of which the raw material is obtained from the cliffs; and both are of the most excellent quality that I have ever met with. The roofs of the ailes are flat, being covered with three courses of plain tiles, embedded in cement, like the terrace roofs at Hungerford Market, and supported on iron bearers, which are moulded, so as to give them an architectural character, consistent with the other parts of the interior. The under side of the tiling is plastered, and forms the ceiling; so that in those parts wood-work is altogether superseded.

The whole of the building has occupied about sixteen months, and the expense is about 2400*l*.

Gordon Square, October 18. 1836.

ART. VI. *Design for a Union Workhouse.* By CHRISTOPHER EALES, Architect.

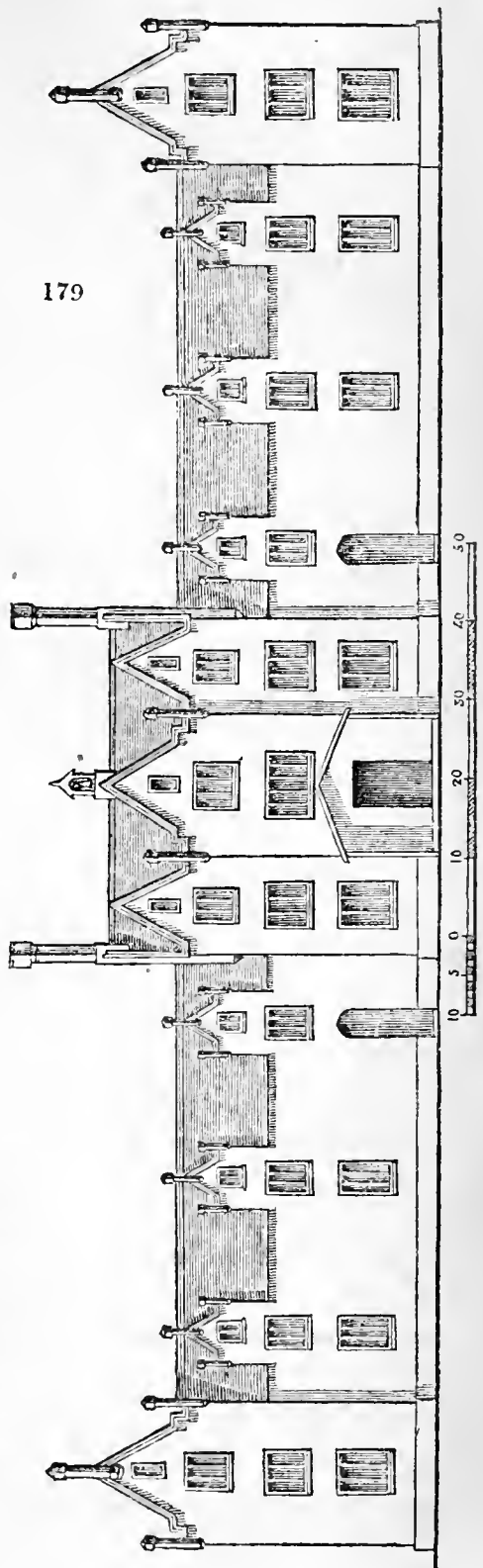
THIS design was prepared and submitted to the Guardians of the Horncastle Union, Lincolnshire, in the early part of the last

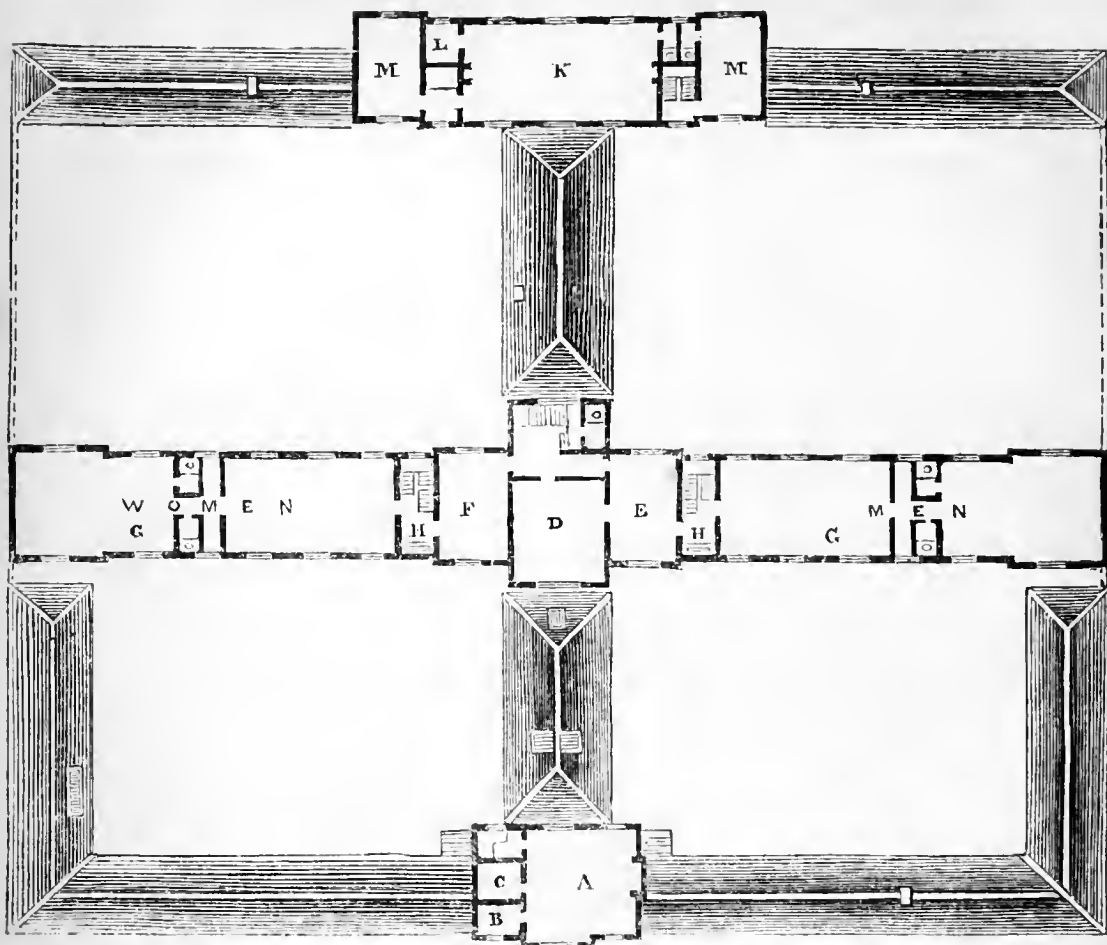


year, for their proposed workhouse, in accordance with the terms of an advertisement which appeared in the daily papers; viz., to accommodate 200 inmates; the expense not to exceed 2,800*l*. The drawings (*figs.* 178. to 180.) are accurately reduced from those sent in, which, however, were not adopted. Should you deem this design worthy of insertion in your Magazine, I shall have pleasure in forwarding you some others (which I have prepared subsequently, under the like circumstances), as my professional avocations will permit; hoping, at the same time, that other gentlemen who have given their attention to this subject may be induced to give to your readers some of the results of their labours, successful as well as unsuccessful; many of which, I have no doubt, would afford much valuable information.

Fig. 179. is the elevation of the principal front of the main building.

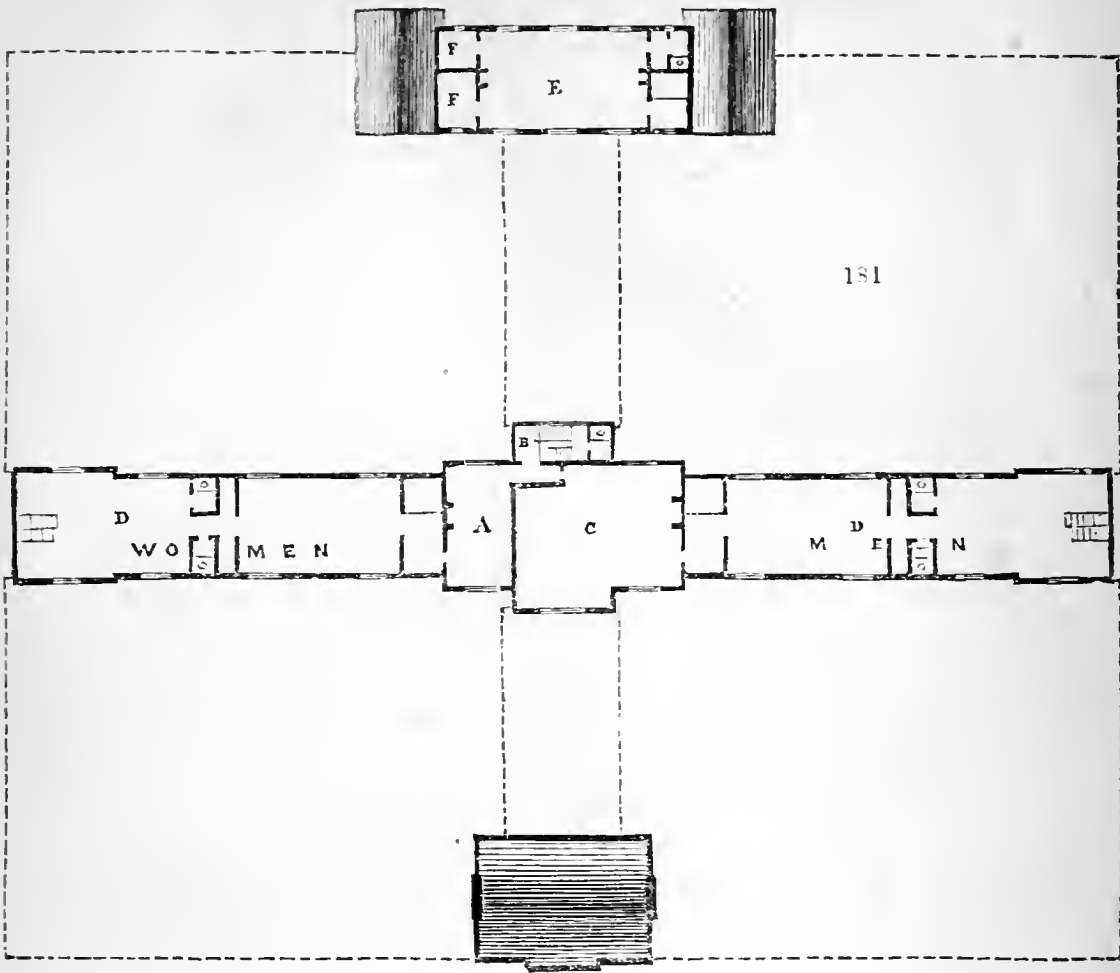
Fig. 178. Ground Plan of the Workhouse. The first building, forming the gate-house, is two stories in height, and comprises on this plan every convenience for the officers of the establishment: viz. A, porter's room; B, relieving office; C, waiting-room for the poor; D, searching-room, together with a staircase leading to the board-room on the story above. A water-closet for the use of the guardians is intended under these stairs. Right and left of this building are the various offices and receiving wards for the use of the girls and boys; women and men's wards, and general purposes; E, work-rooms; F, receiving wards; G, baths; H, washing-rooms fitted





up with troughs; i, privies; k, refractory cells; l, coal-house; m, wood-house; n, bakehouse; o, flour and mill room; p, bread and potato stores; q, laundry; r, ashes. The main building upon this plan comprises, s, chapel. It is proposed, as the service will be attended by the inmates on the Sabbath only, that during the week it should be appropriated for the purposes of the girls' and boys' school and dining-rooms, which could be conveniently done by movable partitions on the dotted lines, at the same time reserving ample space for the performance of daily worship, should it be deemed necessary. On either side of the chapel, t and u are women's and men's dining-rooms, classified, each of which have staircases (v) conducting to the dormitories on the stories above; w, staircase to master's and mistress's rooms, each of which have separate access to their respective departments; x, store-rooms, kitchen, scullery, and larder.

Considering it most essential, in an establishment of this nature, to keep the sick in as isolated a situation as possible, particularly in case of an epidemic or contagious fever, the building containing the infirmary has been placed at the back of the premises, forming a separate structure, and contains, on

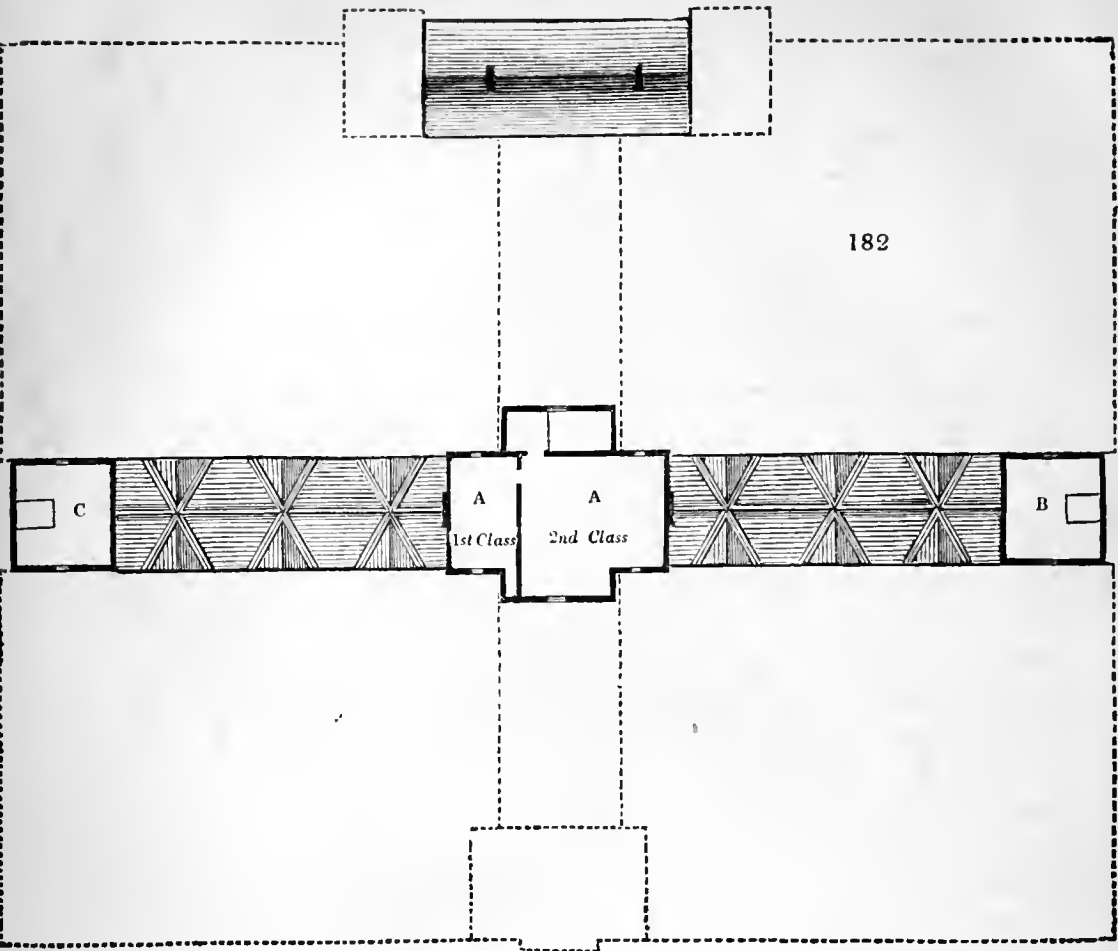


this plan, y, dead houses for each sex; z, staircases for men and women to infirmary, &c.

Fig. 180., Plan of the first Story. The gate-house comprises a spacious board-room, A; clerk's office, B; strong room, c. In the main buildings; d is the master's bed-room; E, master's parlour; F, mistress's parlour; G, women's and men's dormitories, classified, each of which have staircases (H) conducting to the dormitories, on the stories above. Two water-closets and washing-troughs are provided in each dormitory. I, staircase and water-closet for master's apartments; K, women's ward, and women's sick and lying-in ward; L, surgery; M, wards for the insane of each sex, with separate staircases and water-closets.

Fig. 181., Plan of second Story. The main building comprises, A, mistress's bed-room; B, staircase and water-closet; c, boys' first class dormitory; D, women's and men's dormitories, classified, as in the story beneath. In the wings are staircases communicating with the story above; E, men's sick ward, with separate staircase, water-closet, and washing-trough; F, nurses' rooms.

Fig. 182., Plan of third Story. The main building: A, girls' bed-rooms, classified; B, boys' second class dormitory; c, nursery.



Summary of Accommodation.

	1st Pair.	2d Pair.	3d Pair.	Total.
Men -	- 40 -	- 40 -	- — -	- 80
Women -	- 40 -	- 40 -	- — -	- 80
Boys -	- — -	- 14 -	- 12 -	- 26
Girls -	- — -	- — -	- 30 -	- 30
London, 9. Buckingham Place, June 2. 1838.				216

ART. VII. *Hints on Construction: addressed to Architectural Students.*
By GEORGE GODWIN, Jun., F.S.A. and M.I.A.

No. 6. BRICKS AND BRICKWORK. (Continued from p. 468.)

As may be inferred from what we have already written under this head, every thing should be arranged so as to enable brickwork, when executed, to settle down equally. The bricks should all be of the same size, and perfect in form; the mortar joints should be small, or, if necessarily large in part, should be made so throughout the whole extent of the building horizontally. A

mixture of old and new bricks in the same wall is, therefore, inexpedient ; insomuch as the old bricks, being chipped and broken, would require more mortar, to give the work a tolerable appearance, than is necessary for the new, and unequal settlement would, of course, take place. The only way in which old bricks can be intermixed without injurious effects in this respect, is to introduce a continued course or courses of them throughout the building, at certain intervals ; the fewer the better. No portion of a brick building should be carried up more than 4 ft. in height above the adjacent parts, which are also to be raised, as it would settle down previously to the erection of the latter ; and the consequence would be, that, after the remainder was built in conformity to the first-erected part, this, in its turn, would afterwards settle down, and, in so doing, shrink away from that which had previously become solid, and so produce a disruption. In reinstating old walls, underpinning foundations, and, indeed, wherever it is necessary that the work should not shrink, but retain its first position, Roman cement should be used instead of mortar, as that sets immediately on being applied, and afterwards admits of no change of form. This fact teaches us not to use Roman cement and mortar indifferently in the same work. We once saw a bricklayer constructing a high wall, whereof the facing bricks were laid in cement and the rest in mortar ; and the result was, as might have been anticipated, that the latter shrank away from the facing, producing a general split, and that the wall, becoming perfectly useless, was ultimately taken down and rebuilt.

The same evil has been known to occur from the use of facing-bricks, which, being somewhat larger in size than the common bricks forming the wall, were bedded in small layers of fine mortar, while with the latter a large quantity of ordinary mortar was employed.

A little cement may, however, be advantageously used under the ends of bresssummers and girders supporting weights, or in other situations where the mortar would be more than ordinarily depressed.

These, we are aware, are every-day matters, and, with many other points even less so, are often omitted by writers on the subject, under the impression that mention of them would be deemed an insult to their readers. We are led to believe, however, that, like other things constantly beneath our own observation, they are frequently overlooked from that very cause, and deem it expedient, therefore, to refer to them, although but cursorily. Our object is to induce enquiry and reflection. Who knows what a single sentence sometimes leads to ?

A careful arrangement of the smoke-flues in a dwelling-house, with the view of preventing that greatest of all annoyances, a

“smoky chimney,” is of the utmost importance. It is true that the proper action of a flue is, in some situations, interfered with by circumstances against which we can hardly guard, and that, strive as we may, the chimney will still smoke. This, however, is of rare occurrence; for, generally speaking, a little degree of care on the part of the architect and the workmen will be sufficient to render certain the proper action of the flue: on the part of the architect, so to distribute the other openings in the rooms as to avoid cross draughts; and on the part of the operatives, so to execute the work, that there may be no abrupt angles in the flue, or prominent asperities, and that its size be uniform throughout. The opening for the grate should not be too high (3 ft. or 3 ft. 3 in. are sufficient for ordinary purposes); the flue should not be straight from the bottom to the top, but gently twisted in parts; and each fireplace should have a *separate chimney*. The flues themselves should be smaller in size, when practicable, than they are usually made; and if, as in Hiort’s and other patent flues, the form of their plan be an octagon, a circle, or an oval, rather than a parallelogram as is commonly employed, the possibility that they will not act well would be lessened. Flues should not be formed in *external* walls, if another position for them can be found; because, when that is the case, much heat is wasted, which might have assisted in warming the house; and as the smoke, in ascending, is more quickly robbed of its caloric, by means of which it does ascend, than it would be if the back of the flue were inside the house, the probability that it will return into the room is increased. When, perforce, the chimney is so placed, and this evil is seen to result, it may sometimes be remedied by increasing the draught; which can be done by introducing a small pipe above the gathering wing, communicating with the external atmosphere, or by forming a cold-air drain, having an opening under the grate.

The act of pargeting the flues (or rendering them inside with a composition capable of withstanding heat), so as to make them perfectly smooth, and to prevent the escape of the smoke through any ill executed joints into other parts of the building, is often carelessly and inefficiently performed by workmen, unless properly superintended; and, as much inconvenience may result from any inattention in this respect, the architect should not fail to see that it be properly executed. The composition generally used for the purpose consists of one part of Dorking lime, and three parts of cow-dung, properly mixed. When this last material cannot be obtained, the ashes of a smith’s forge or brick-kiln, when ground, or even refuse bricks, pounded, will serve to supply its place.

Workmen should never be allowed, on any pretext whatever, to cut into the chimney breasts, as they are almost certain, in so

doing, to disturb the pargeting of the chimneys. Even in fixing the blocks for the skirtings, a header is often driven into a flue, sufficiently to allow the smoke afterwards to escape thereby into the apartment, to the great surprise and alarm of its occupier. Nor can this evil be remedied without considerable inconvenience: sometimes, indeed, its source is with difficulty discovered; for the smoke, being confined between the ceiling and the floor, may travel to some distance, and so make its appearance far away from the seat of the defect.

In order to prevent the necessity of cutting into the breasts, especially with relation to the filling-in trimmers introduced to support the chimney-slabs, pieces of paving-stone should be worked in with the bricks, projecting slightly, to serve as corbels.

To say that no timbers should be placed within 4 in. of a flue would seem to be needless; and yet it is not long since a fire broke out in a church at Liverpool (built under the direction of an architect of acknowledged ability), and, indeed, destroyed it, which could only be accounted for, on the supposition that a wall-plate, or other piece of timber, entered a flue, and had, in consequence, ignited. The remark, therefore, although the fact is self-evident, may not be entirely uncalled for. Workmen are ordinarily so careless, and often so lazy, that, sooner than trouble themselves to cut off a few inches from a piece of timber, they would run much risk, and subject their overlookers to great responsibility. If, therefore, an architect would avoid difficulties, where he does not employ a clerk of the works, he must keep his eyes open, and his attention ever awake. And here we would remark, although it is quite episodical, that, to obtain and preserve the good will of the artificers employed under you, by well-timed praise, and the exhibition of a liberal spirit, is no small aid towards the successful fulfilment of your wishes. We could not ask for an architect anything more useful than a set of workmen interested in his success, and on whom, therefore, he could entirely depend. This was remarkably the case with the architects of the middle ages. The reverse will subject you to inconveniences hardly to be guarded against; and which, although singly too trifling even to be spoken of, may, in the gross, produce much discomfort, or tend to mar your best efforts. Not long ago, on lighting a fire in one of the principal rooms of a large building, erected under the superintendence of a well-known architect, unfortunate in gaining the ill will of his operatives, it was found that no smoke escaped, but that all came back into the room. No one could divine the cause; but, a boy, on being made to ascend, discovered that, half-way up, the passage was barred by some solid material which was immovable. On taking down

the chimney-breast, from the top (for the obstruction was so placed, with relation to the timbers of a floor, that no other means of removal were practicable), a piece of Yorkshire stone kerb was seen firmly bedded over the opening; and this had been done, notwithstanding the continual presence of a clerk of the works.

Do not scruple to apply the plumb-line occasionally to the walls, or to the sides of the openings in them, and, if not upright, to have them taken down and rebuilt: the mere fact of having done so even once will induce care on the part of the bricklayers. On the same principle, it is advisable that you should not, on any account, allow departures from your directions, at the commencement of a building, to pass unaltered, whatever you may do afterwards. The stability of brickwork is materially lessened by any deviation from verticality; but, apart from this, many serious evils are caused by it; among which, the fact that, in order to remedy the error, the plasterer is compelled to load the walls in parts with a large additional quantity of "stuff," is not the least. If the error occur in internal openings, the carpenter is obliged, in order to overcome the difficulty, either to block out his linings at the top of one side, and at the bottom of the other, whereby the size of the opening is necessarily made less than was desired; or to cut away part of the brickwork, which is very objectionable, as it tends to shake and disturb the whole construction: and, if in external openings, it remains an incurable eyesore, so long as those parts of the building exist.

Do not fail to secure thoroughly the upper part of brick walls from the effects of the weather: on this, above all other points, depends the length of time during which they will remain sound. If stone coping be used, the joints should be made perfectly water-tight; and it is desirable that the coping should project as much as possible before the face of the wall. When no coping is used, the top course must be set in cement, without fail. The mode generally adopted in this case is, to bed upon the top of the wall, as completed in mortar, two courses of plain tiles in cement, projecting slightly on each side before the face of the wall, and on these to set a course of bricks on edge in cement. We would suggest that a course of slate, which can now be obtained of any thickness, might be substituted, with advantage, for tiles, so far as appearance is concerned. This, however, should be set with coal-ash mortar, rather than cement, as the latter will not adhere to slate. In some cases, walls might be finished with a course of bricks flat in cement, projecting on each side a quarter of a brick, to throw off the water: thus, for a one-brick wall, the top course would be one brick and a half; for a two-brick wall, two bricks and a half; and so

on. This has a better appearance than bricks on edge and tile-dressing, but is, probably, not so effectual as a protection.

Respecting bricks made specially for the purpose of coping walls, we shall elsewhere have occasion to write.

REVIEWS.

ART. I. *Designs for Sepulchral Monuments.* By Carl Tottie, Architect. Engraved by Edward Ravenscroft. London, 1838.

EVERY one who is in the habit of looking into our churchyards and cemeteries with the eye of an architect or an artist, cannot fail to have observed two things: first, the inferiority, in point of design, of the great majority of tombstones; and, secondly, the want of perpendicularity in their position. We might notice a third evil, which is, that the greater number of the compound, or built up, monuments, being for the most part only stone cases, are separating and coming in pieces. These are crying nuisances, even in Père la Chaise, and they are beginning to show themselves in the cemetery in Kensall Green. To us, the want of perpendicularity is by far the greatest of the three evils, inasmuch as it is most in opposition to the main use or object of the monument, permanence. An indifferent, or even a deformed, piece of sculpture, cut on a stone of sound quality, placed erect on a basis of masonry, as firm as a rock, is surely better calculated for a monument, than a stone let into the earth like a plant, and seeming to require a stake to keep it upright, no less than a newly planted tree. It is not in the nature of things that a monument like this can command respect as such; as every one must feel, when he recalls to mind the impressions which have been made on him by the monuments fixed into exterior walls of churches, or the walls which surround churchyards.

Monuments in open churchyards may be divided into two classes; those which are built up, no matter of what form, but so as to cover the grave; and those which consist of single stones, or even of built up objects, placed at one end of the grave. The first kind, which may be considered as tombs, have very frequently foundation walls to support them; and, when these walls are of as great a depth as that to which the ground has been moved, or is liable to be moved, the perpendicularity of the structure is secure; though the masonry, or rather casing, above ground, may begin to separate at the joints in a few years. Single gravestones, however, or headstones, as they are called in many places, are seldom placed on a solid foundation of masonry; and hence, as the soil on each side cannot be exactly of the same texture, or throughout the year, and especially the

winter, of the same degree of moisture, the soil on one side becomes softer than that on the other, and to the soft side the headstone is certain to lean. Were it possible to keep the soil on every side of the headstone of one uniform degree of firmness throughout the year, the tombstone would sink perpendicularly, and without leaning to either side; and stone being a heavier material than earth, it would go on sinking till it came to a stratum of nearly the same hardness and solidity as itself. This is supposing the headstone to be let into the soil, without any "footing," or foundation of masonry. If a foundation of masonry were given at a sufficient depth below the surface, and the stones set upon it, and built into it, so as to be in a perpendicular situation, independently of any aid from the soil, so far the permanence of the headstone would be secure; but, as it could not be expected that this footing, or foundation, would be made more than 2 ft. or 3 ft. under the surface, the stability of the structure, and consequent perpendicularity of the headstone, would be liable to be disturbed by the digging of every adjoining grave. This is an evil which it will be found very difficult to avoid, without incurring considerable expense. Either a separate mural foundation, as deep as the graves are liable to be dug, which is often upwards of 10 or 12 feet, must be made; or, when the cemetery or burial-ground is laid out, underground walls, or arcades supporting a wall reaching within a foot of the surface, should be formed parallel to each other, and at regular distances, and on these walls the structures could be raised, on, or rather in, which the headstones are to built. The distance between the walls should be sufficient to admit of two graves, with a walk in the centre, say 20 ft.; and the width of the top of the wall should be such as to admit of two headstones being placed on it, back to back, say between 2 ft. and 3 ft. If the underground arches were made of 10 or 12 feet span, the piers being only required to be dug at that distance, the expense would not be so great as would at first sight be imagined. The piers might be formed wholly of concrete.

The next best plan that we can think of for securing the perpendicularity of headstones is, to base them upon a flagstone, let into the soil in a correctly horizontal position, and on a solid base, at the depth of 2 or 3 feet; supporting the headstone by masonry on each side, bedded on the flagstone. It will then be impossible for the perpendicularity of the headstone to be disturbed, except by undermining the flagstone; and, if the masonry raised on it were brought up to the surface, and there finished with another flagstone of greater thickness, and properly squared and finished, as a plinth (the headstone passing through it), there would be the less danger of undermining taking place. At all events, something requires to be done to preserve the per-

pendicularity of headstones, more especially in all new churchyards and cemeteries. In the crowded burial-grounds within the metropolis this is, perhaps, impossible; but most of these are such intolerable nuisances in other respects (we allude to the immense number of interments in very limited spots), that we trust the public will soon become so disgusted with them, as to call upon the legislature for an act to preclude all burying within churches every where, and all burying within towns of a certain extent and population. Such a law has long been prevalent in France and the greater part of Germany.

To recur to Mr. Tottie's designs, we give him great praise for having made an attempt at improvement; the three designs contained in this first number are simple headstones, and do not enable us to form a judgment of the work. They are beautifully engraved, in the line manner. In describing the designs in future numbers, we trust Mr. Tottie will go amply into the details of execution, and, above all, that he will consider the subject of keeping headstones in a perpendicular position, and devise means for attaining this object.

MISCELLANEOUS INTELLIGENCE.

ART. I. *Foreign Notices.*

JAMAICA.

New Church at Annandale, St. Ann's. — The foundation stone of a new church, dedicated to St. Paul, was laid, on April 7. 1838, at Annandale, St. Ann's, Jamaica. The church is one of the largest in the island, and was built (as I learned from the address delivered by the Rev. H. Browne, on the occasion), principally by the labour of the negroes and other coloured persons, voluntarily bestowed. It was projected by the Hon. Robt. Johnston, to whom this spot, called the "garden of Jamaica," belongs. — *F. Lush.* August, 1838.

GERMANY.

The Catholic Church of Darmstadt is the work of George Moller, one of the most eminent of the pupils of Weinbrenner. It is a rotunda, the internal diameter of which is 135 ft., and is avowedly formed on the plan of the Pantheon at Rome, being lighted, like that, by a single aperture in the centre of the dome; and the height of the summit of the latter being equal to the diameter within the peristyle, viz. 132 ft. The inner diameter of the Pantheon is 137½ ft. It appears, from Moller's own account, that it was his aim, at Darmstadt, to preserve all the essential beauties which characterise the interior of the Roman structure; and to avoid that multiplicity and minuteness of parts, together with other defects, which impair its grandeur, and detract from the harmony of the whole: nor can it be denied that he has greatly simplified his building, by substituting for the unequal spaces, the numerous recesses, and the double tier of ordonnances in the Pantheon, a continuous peristyle of twenty-eight insulated columns, upon the entablature of which the vault rests. The effect of this circular colonnade, which is, perhaps, unique of its kind, is greatly enhanced by the narrowness of the intercolumns; for these do not exceed a diameter and a half; consequently they give the character of sufficient richness, as well as of strength. (*For. Quart. Rev.*, vol. xiv. p. 98.)

ART. II. *Domestic Notices.*

ENGLAND.

LANCASHIRE.—*Manchester Architectural Society*.—On Sept. 5. the seventeenth general meeting of this Society was held in their rooms in Mosley Street. After the business of the meeting had been disposed of, Mr. J. W. Hance, the secretary, read the first of a series of papers investigating the principles of a new system of perspective, which has created much sensation, invented by Mr. Parsey of London, who delivered a course of lectures on the art in this town in the early part of the present year. After a few prefatory remarks on the necessity of a knowledge of perspective to all who wished to attain even a tolerable proficiency in drawing, Mr. Hance proceeded to compare the principles of Mr. Parsey's system with those of the usual one, pointing out their discrepancies. Assuming as his data, 1st, That, for any art or science to be of practical utility, it must be based on sound principles, invariable and immutable; 2dly, That, of two systems relating to art, that must be the better which is the more simple in practice, and whose results are more in accordance with natural effects; 3dly, That any practice, even if sanctioned by long custom, which can be proved to be founded on false principles, is unworthy of support, and should be discarded by those who are anxious to follow the truth. Mr. Hance remarked that perspective was generally defined as a section or cutting by the plane of delineation, or picture, of the rays supposed to proceed from the object viewed to the eye of the observer, and was often familiarly illustrated by supposing a window, plate of glass, or other transparent plane, to be interposed between the eye and the object; the figure generated on the glass, &c., by the rays, would be the perspective representation of the object; and to perform this upon an opaque surface, such as paper or canvass, by mathematical rules, is the science of perspective. Upon the placing of the picture, or plane of delineation, the whole operation depends; and this was the point to which he should confine the present investigation. Great diversity of opinion prevailed about the mode of fixing this plane; but he thought he should be able to prove that Mr. Parsey's assertion was correct, "That we cannot *choose* the plane, but that Nature herself marked it out." All we have under our control in viewing an object is, to fix the position of our eye relative to it; which being once fixed, only one image or figure could possibly be impressed on the mind. There must, therefore, be only one fixed, invariable, natural plane, intersecting the rays of vision in the same manner, under all circumstances and in all cases; and, if this were transposed into a sensible tangible plane, such as a picture, &c., no alteration would take place in the image seen. Now, he would prove, by a small diagram, this natural plane to be, as in Mr. Parsey's system, at right angles to the axis of vision or centre of the system of rays, which is always in the centre of the object viewed; for in this way only can we obtain the same result in all cases; and, as it would be obvious that, by the usual system, it was possible to obtain two or more representations of the original object with the same given data, it must be manifest that it is erroneous, and cannot be depended on as affording satisfactory results. After Mr. Hance had concluded his remarks, which were listened to with much interest, an animated discussion took place; and it was the unanimous opinion of the meeting, "That Mr. Parsey's mode of finding the plane of delineation is the correct one." (*Manchester Guardian*, Sept. 12.)

ART. III. *Retrospective Criticism.*

BRITTON's Dictionary of Architecture. (p. 417.)—Whether you will allow these remarks to appear in your section of "Retrospective Criticism" remains to be seen; but I certainly must say that, had your commendation of Mr. Britton's *Dictionary* been more qualified, the character the book must ultimately obtain would not, in the slightest degree, have been injured thereby. It is

true, a work of this description is not likely to obtain more than a very cursory examination from a reviewer, who will form his opinion from looking at it here and there; I am willing, therefore, to take for granted that you did not alight upon any blunders, although the book absolutely swarms with them. In regard to foreign terms, the mistakes are almost innumerable: the very first page gives us *Rechentisch* as the German for Abacus, in its architectural meaning; while *Modeno*, and *Schurbwegen*, are given as the corresponding Italian and German for Archivolt; *Unterheil!* as the technical German word for Base; *Decke zum, gekender*, as that for Baluster; *Ort*, instead of *Grundfläche*, as that for Area; *Pfalz*, as that for Palace; *Raum*, as that for Room; *Baw*, as that for Bay; *Spera*, as the Spanish for Spire; *Passagio* (instead of Andito, or Corritoio), as the Italian for a passage between the rooms in a house; *Moler*, as Spanish for Mill; *Piliera*, as Italian for Pillar; and while, instead of Architecto, we are presented with the following paraphrastical explanation in choice Spanish, *El maestro de obsa parvedissear!* What a conglomeration of blunders does that last phrase alone exhibit! The above, however, are only a few samples of the kind; yet I think they will be allowed to show that Mr. Britton would have acted far more discreetly, had he not attempted to have anything to do with foreign languages; more especially as, where there is no mistake as to foreign words themselves, there is in regard to their idiomatic application; and, also, because no systematic plan is observed, for, of strictly technical terms, the corresponding ones in other languages are very rarely given; although most of all required, being not always to be met with in German, Spanish, and other dictionaries. Such is the case with Fluting, Garret, Keystone, Spandril, &c.

On the other hand, the work is overloaded with a vast number of terms perfectly useless, though of two very opposite classes; the one consisting of obsolete archaisms, likely never to occur in the reading of any one who is not a diligent student of antiquarian lore, consequently much too far advanced to have any occasion for such a dictionary, since his own shelves will furnish him with infinitely better authorities and books of reference. The other class comprises a great many words of such every-day use as to require no explanation whatever; among these are, Armoury, Cottage, Domicile, Hermitage, Hovel, Hut, Image, Organ-loft, Recess, Shambles, Tenement, Town, &c. Now, these are assuredly not technical terms; and, as they are not introduced either for the purpose of defining their origin and etymology, or for the sake of bringing on any remarks on the things themselves, they are not only valueless, but a positive encumbrance to the work.

In order, perhaps, to make amends for superfluities of this kind, a great number of strictly *technical terms* are omitted altogether! In saying a great number, I shall hardly be thought to exaggerate, when I assert that of such omissions I have already detected upwards of *two hundred and fifty*; and add that among them are, *Bird's-beak moulding*, *Block cornice*, *Calotte*, *Casino*, *Cathetus*, *Cornicione*, *Curb roof*, *Discharging arches*, *Muniment room*, and, to pass over the intermediate letters of the alphabet, the exceedingly useful term, *Velum*. The same remark applies to the biographical articles; where, though we find such utter nobodies as John Golding, a carpenter; Sutton, a carver; Stevyns, a coppersmith; Thornton, a glazier; and other *notabilities* of the same stamp; we look in vain for the names of Palladio, Vignola, and Vitruvius! although Alberti, and a few other Italian architects, are inserted. This is absolutely staggering, and cannot fail, as Mr. Britton himself expresses it in his own dedication, "to astonish even human wisdom!" However, *si populus decipi vult, decipiatur*: all I object to is, their being deceived beforehand, and deluded into purchasing a work that, so far from being *au courant du jour*, is a trashy compilation, crammed with anilities, senilities, and puerilities, with the grossest blunders, and the most startling absurdities. — *Candidus*.

Parsey's Convergence, &c. (p. 427.) — Notwithstanding all that has been said of late on what Mr. Parsey calls his new system of perspective, the subject seems, in several particulars, as far from being decided as ever. There is no

doubt that, if he has done nothing more, Mr. Parsey has been the means of inducing many to study the subject more deeply than they would otherwise have done, and thus of eliciting truths and illustrations that might otherwise have been concealed even from those who have since brought them forward. It were doing Mr. Parsey mere justice, to say that he has borne with opposition and abuse in a manner which plainly shows him to be not only firmly convinced himself of the truth of his principles, but sincerely desirous that others should have the benefit of them also. I confess Mr. Parsey's self-complacency, in having been the first to "solve this important problem, which has baffled the endeavours of distinguished scholars and artists of all refined nations, from the earliest ages," has more than once excited a smile. I do not profess to have studied his system very deeply, but I have heard him deliver a course of lectures on the subject; so that, I suppose, I have formed tolerably correct notions of his general principles.

Numerous misconstructions have arisen from not clearly understanding what is meant by the *plane of the picture*. Some suppose the picture to represent what is seen by the eye, when fixed, and looking at one particular point in space. In this case, the eye sees always all round to a certain distance, with the more distinctness as they are placed nearer to the centre, or point on which the eye is fixed; so that the objects may be said to be arranged in circles of equal distinctness. This I do not conceive to be the real meaning of the term *picture*; because, when a person is looking at any particular view, or collection of objects usually represented in drawings, he does not keep his eye fixed on one point, but scans separately the individual objects before him.

Nor is this the view Mr. Parsey takes of the subject. He correctly applies the term *picture* to the representation of a series of objects seen by the eye, the *head* being fixed, but the eye allowed to move.

We suppose, then, a number of objects (or, for the sake of simplicity, one object) to be before the eye, and that it is required to draw a representation of it upon a plane surface. In the first place, we imagine a straight line to be drawn from each point in the object to the eye of the spectator; the whole is then called, as they all meet in a point, a *cone of rays*; a term, though not mathematically correct, yet sufficiently expressive for our purpose. Now, a perspective representation of any object is supposed to be a section of this cone of rays, made in a definite position relative to the eye and the object; so that whether the eye looks at this section in its original position, or at the object itself, it receives precisely the same impression. This may be rendered more familiar, by supposing the object to be seen through a pane of glass. Every body will allow that the appearance of the object will be the same, whether the glass be held at right angles to the centre of the cone, or in any oblique position; and, if we only imagine the image, as seen through the glass in different positions, to be suddenly turned into a picture, we shall have an infinite number of pictures all actually different, but each, when placed in its own position, producing the same image; and, of course, each picture can be correctly viewed from only one point.

Now, as far as I am aware, the difference between Mr. Parsey's system and the old one, is in the choice of one of these pictures or sections, and its relative point of view; the former asserting that the plane of the picture should invariably be placed at right angles to the centre of the aforesaid cone of rays, the latter requiring it to be always vertical to the horizon. Each is strictly and mathematically a correct picture; so that, though Mr. Parsey is right, it does not follow that all who have gone before him should be wrong.

Although I do not pretend to advocate the universal application of the old system, neither can I allow the absolute necessity of always adhering strictly to Mr. Parsey's; for though the old one, if carried to an extreme, would become very inconvenient in practice, it would in many, and even most ordinary, cases be found quite as convenient as the other.

Mr. Parsey says his is the only true system, because it alone enables us to make a true representation of "*what is seen by the eye*." Now, here I conceive

he is in error ; for, though he approaches nearest to it, I contend that it is impossible, upon a plane surface, to represent what is seen by the eye upon a *concave surface*.

I suppose few will be so bold now, as to deny the natural convergence of perpendiculars ; so far am I from doing so, that I will assert this universal law, from which there is no exception, that all parallel straight lines appear to converge, whatever their position with respect to the eye, or to the plane of the picture. Every set of parallel lines, which are not also parallel to the plane of the picture, must converge to its own vanishing point. If they are parallel to the plane of the picture, although they appear to the eye to converge, yet must not be drawn so, because the planes in which these lines are placed, and the plane of the picture, being parallel, are similarly placed with respect to the eye, and the position which produces convergence in one, produces it also in the other ; so that to the eye the representation will be perfect. Mr. Parsey says that, when the eye is opposite the middle of a rectangular object, that is, when this is parallel to the plane of the picture, the sides do not converge. Now, this is quite right so far, that they should not be so represented ; but this is because the representation is made upon a plane surface, parallel to the object. There can be no doubt that the sides, both upright and horizontal, *appear* to converge, and would be so drawn if the representation were made upon the true section of the cone of rays ; viz., a concave surface, having the eye in the centre. It can be shown, mathematically, that the boundaries of all rectangular surfaces, which are, in fact, straight lines, appear to the eye to converge, and are thrown upon the retina of a peculiar curve, the properties of which I am not acquainted with.

The fact of our seeing every thing on a concave surface first struck me on looking at a diagram of Mr. Parsey's, representing a rectangular tower, with a rectangular opening near the base, opposite the centre of which opening a spectator was supposed to be placed. As the eye, in this case, is placed below the middle of the object, of course the perpendicular sides appear to converge upwards ; and the sides of the opening, being parallel to the sides of the tower, must converge also ; but the eye is placed opposite the middle of the opening, therefore, according to Mr. Parsey's own principles, its sides do not converge. To explain this contradiction, he said that, when the eye looked at the opening only, it formed quite another picture from that of the whole building ; so that, in short, the image any object makes in the eye depends not on its position with respect to the eye, but on its position in the picture. If it is placed in the centre of the picture, it has one appearance, and a different appearance for every different position in the picture ; and all this time it is in precisely the same position with respect to the eye. This is a necessary consequence of Mr. Parsey's principles when followed out.

Now, all these absurdities arise in consequence of the vain attempt to represent upon a plane surface "what is seen by the eye" *on a concave one* ; which, as appears to me, is an impossibility. The representation may be a correct one, so far that it produces on the eye the same impression as the object, if viewed from the proper point, but it is not, strictly speaking, "what is seen by the eye."

This may be shown in a very simple manner, thus :— Suppose a number of objects of equal size to be placed in a segment of a circle, in the centre of which is a spectator looking towards them. Of course, they are all equally distant from him. Now, Mr. Parsey would represent these by bringing them all upon the chord line, joining the two outer objects, which, according to him, would be the *true* plane of the picture. The consequence of this would be, that the two outside objects, being already upon this plane, and those in the middle at a distance from it, the outside ones would be represented largest, and the others would diminish in size towards the middle one, which would be the smallest of all. This would be Mr. Parsey's drawing of these objects, but it would be absurd to say that it is what would be seen by the eye ; because, as the objects are all of equal size, and at an equal distance, they must, I maintain,

be *seen* as of equal size. What is seen by the eye is the image formed upon the retina; and it would be easy to show, mathematically as well as optically, that in this case the image would be an exact counterpart of the object.

I think a strong argument in favour of this opinion may be derived from the fact of the retina being an exactly similar concave surface, so that images are cast upon it precisely according to the angles at which they enter the eye. If a plane surface were presented, as in the camera obscura, then all right lines would be so projected. Even supposing, as Mr. Parsey does, that the retina is not the seat of vision, the case is not altered, as the image is formed there, and is not changed by after reflection.

I know not whether I have explained my views sufficiently clearly to produce conviction in any one else; but my conclusions are, to my own mind, perfectly satisfactory, which must be taken as my apology, if I should have expressed myself at any time over confidently: it has always been with deference to the opinions of those who have studied the subject longer and more deeply than I have done. — *B. H. Manchester, August 20th, 1838.*

Parsey's Convergence of Perpendiculars. (p. 427.) — Before proceeding in the investigation with Mr. Parsey, (for which pertinacity I offer no other apology than is implied in my belief that, if Mr. Parsey's theory be correct, his most lengthy and tiresome antagonists will not be among the first, but the third-rate, talent of the country; and that, if not correct, it will be left by those whose opposition would overwhelm it at once, to the less influential discussion of such as Kata Phusin;) I must submit a few observations to Mr. Chappell Smith. In p. 427. line 8. from the bottom, I would enquire the full signification of the pronoun "we." If it be an assumption of the editorial "we"; and, if thus, the proposition which it is employed to advance refers only to the intentions of artists towards Mr. Smith in particular, and to his own practice; it appears to me that the fact of which that proposition informs us, though very interesting, is of little importance: but, if the "we" is to be extended to the whole race of mankind, I beg to submit that, in my opinion, Mr. Smith is in error. I will answer for the intentions of the artists of the present day, which are, invariably, that their pictures should be viewed from a given point, and at a given distance; and I will further answer for the practice, not only of the connoisseurs, but of the general public, of all time, which is, has been, and must be, to view every picture from a given point, and at a given distance; that distance being the altitude of an equilateral triangle, of which the greatest dimension of the picture is the base. I will prove this a little farther on, in replying to Mr. Parsey.

And, secondly, I would enquire of Mr. Smith (in relation to his search after a theory of approximation), whether it be charitable to the general public, because some persons do not stand in the right place, to give connoisseurs no right place to stand in; and whether he actually believes that the public will prefer a system which presents them with an "approximation" to the true image, where they cannot see it, to that which presents them with the true image, where they can see it. Even supposing that they did prefer universal error to local truth, the approximation system is a mere chimera; for, supposing the proper position of the observer to be 10 ft. from the picture, every concession to the eyes of those who stand 15 ft. from it is a double infliction upon the eyes of those who stand 5 ft. The rule given by the Jesuit for ascertaining the ratio of apparent diminution is perfectly correct; and enough has been written on all sides to show that this apparent convergence and diminution is immense. I will show, however, by Mr. Smith's own figure, that neither ought to be represented.

And now for Mr. Parsey. He says, in p. 425. line 22., "If there be any reason," &c. Certainly there is; but I mean to say that horizontals which are at right angles to the direction in which the spectator is looking* (or, for shortness, parallel horizontals) are no more to be represented as convergent

* When I use this expression, I mean actually: no line is so apparently.

than verticals. After this, we agree perfectly down to "the delusion of the pane of glass;" and here comes the tug of war. There is no delusion in the case, for every picture is to be considered as a vertical pane of glass; through which we behold what is represented on the canvass. Is not the picture always supposed to be as "parallel to the objects seen through it" as the glass? Besides, the lines traced on the glass, being exactly correspondent with the lines of nature, being traced above them, as it were, must also correspond with the image on the retina, that is, must occupy the space of glass through which the pencil of rays coming from the object to the eye is passing. Now, as these lines must correspond with the image on the retina, and we know that image to be one of convergent lines, the perpendiculars traced on the glass are apparently convergent lines, and are convergent to exactly the same degree as the lines of the object over which they have been traced; and, therefore, all the perpendiculars in the picture, drawn parallel and vertical, do appear to converge to exactly the same degree as those actual lines which they represent, provided they subtend the same angle, which if they do not, they cannot represent a building of the same height, and which, in all good pictures, they do.

Mr. Parsey seems to think that the lines being parallel, whether the pane be horizontally direct, &c., is an answer to this argument; whereas it only farther proves that, if we were compelled to look sidewise at all pictures (as we often are in cases of front lights), the verticals should still be drawn nonconvergent; though they then represent lines of immense apparent convergence, for they converge as much themselves.

And, if Mr. Parsey still considers the pane of glass delusive, let me ask him one question. We will suppose he has traced his picture through glass, over the natural lines. He will find he has a perfect perspective drawing, every retiring line duly convergent. Now, what business have we to change the direction of the verticals in laying this on paper, and to let the horizontals alone? If the retiring lines are to be altered too, what extra convergence is to be given? With regard to the reflections in water, that is merely a proof of apparent convergence, or of the fact that, if we were to represent verticals on plane *horizontal* surfaces, it must be done by lines converging *to* the spectator. Mr. Parsey's extraordinary diagram of a Turkish hatchet certainly upsets his theory, that "objects present to the sight natural appearances." With it, however, I have nothing to do, farther than remarking that every draughtsman, properly so called, would represent a cylinder by parallel lines, inasmuch as (as Mr. Parsey justly concludes) "all perpendiculars appear to converge on the principle of the cylinder," and, therefore, the cylinder on the principle of all perpendiculars.

But the great bone of contention, in all these cases, seems to be, that the sticklers for represented convergence suppose that the perpendiculars in the picture *do not* subtend the same angle which the natural lines they represent do. I shall therefore endeavour to prove, first, that, when the observer stands in the right place, they do; secondly, that is necessary for, and natural to, every observer to put himself into the right place, and that every observer does so; and, thirdly, that the error which would be an approximation to truth, in *one* wrong place, would be rather more than an approximation to absurdity, in *another* wrong place.

Now, for the first point, I can only refer again to the argument at the bottom of p. 282., which Mr. Parsey passes over without notice. He acknowledges, however, that the lines of his window-frame run into perspective, and in precisely the same degree as the distant verticals on which they fall; and in what do the verticals of a picture differ from those of a window-frame? They are subject to the same laws, and, of course, converge equally: the prejudice lies with Mr. Parsey, whose eye is evidently not practised enough to allow him to believe that the near parallel lines of a picture have an apparent convergence exactly as great as the distant lines they represent: yet this is the case. And, if Mr. Parsey thinks that the verticals in a picture do not often subtend the

same angle as those they represent, I can assure him that, in any picture of Canaletti's, he may take the angles trigonometrically, and give the elevation of the buildings to within a foot. I suppose he knows that this ought to be the case in every good picture; and, if it were not, the fault could not be remedied by introducing convergent perpendiculars, any more than La Fontaine is said to have mended one of his lines, which was rather too short, by making the next rather too long.

Secondly, I say that every spectator naturally takes the true distance. This distance may be, as I said, the altitude of the equilateral, &c.; but it must not be less. In most pictures, the full sweep of the eye is not taken: the side of the equilateral is allowed in the generality; in high pictures, a good deal more. Now, it is impossible to see the handling of any picture at a greater distance than this; for observing dispositions of colour, we often retire: but the colour has nothing to do with the perspective, and the moment we wish to see the drawing, we approach. In the exhibition room of the Society of Water Colours, the screens are so placed, that the spectator cannot get out of his distance. Paintings, it is true, are often hung above the height of the eye; but only when it cannot be helped, as in exhibition rooms, or when they are mere furniture pictures; and, even then, their elevation only increases the apparent convergence of their verticals, and, therefore, would render any actual convergence still more palpably absurd. In the case of vignettes, which are seen at a greater distance, they are only parts of pictures, and allowance is made by the artist.

But, thirdly, the approximation system is most absurd, inasmuch as the convergence of verticals is *always wrong, where the rest of the perspective is right*; and, where it is right, the rest of the perspective *must* be wrong. Taking Mr. Smith's fig. 162., he represents the height $s x$ by the height $s x$. Now, $s x$ is the height of which an impression is received by the retina, from the line $s x$: but what impression will the retina receive from the represented line $s x$? If the eye be in the right place, it will receive the impression of a line which will be to $s x$ nearly as $s x : s x$; but, if it be a little nearer than it ought to be, it will receive an impression which is less than $s x$ in a greater ratio than that of $s x$ to $s x$; whereas if we represent $s x$, the eye in the right place receives impression $s x$, which is the true one, which shows that the allowance which Mr. Pococke affirms is made by some draughtsmen (but which, I am sure, is made by no artist), of diminishing altitude, is not only unnecessary, but improper.

Finally, Mr. Parsey feels confident that something or other would have happened, had Canaletti perceived the natural laws, &c. I rather think, from the peculiar air of the figure in fig. 161., that Mr. Parsey has very little idea of the constant and intense observation of natural laws with which the life of an artist is occupied; very few draughtsmen (as people call themselves when they have learned to draw straight lines with a rule) have. However, the question is one not to be decided by authority, and so I shall not insist on the point. Mr. Parsey, however, boasts that he is borne out in his confidence by the first talent of the country. Now, I know, as well as he does, that he only includes in this expression men who are good mathematicians, but who know no more about drawing than their compasses. The testimony of one practical man would be worth any fifty of them; and, if Mr. Parsey will request the testimony of J. M. W. Turner to the correctness of his principles, and obtain that testimony, I have done.* — *Kata Phusin. Sept. 5.*

* Speaking of Mr. Peter Nicholson's instrument (which, of course, is useful when great accuracy is required), I would point out to Mr. Parsey an instrument for perspective drawing with which he may, perhaps, be unacquainted he will find its brazen voice bear witness against him, Gavard's Diagraphie.

THE ARCHITECTURAL MAGAZINE.

DECEMBER, 1838.

ORIGINAL COMMUNICATIONS.

ART. I. *A summary View of the Progress of Architecture in Britain during the Year 1838; with some Notices relative to its Advancement in Foreign Countries.* By the CONDUCTOR.

IN conformity with the plan first adopted in our Third Volume, we proceed to give a short notice of the progress made in architecture in Britain during the past year (1838); though we fear that our readers will find this notice little more than the echo of our summary for 1837. The truth is, that, in drawing up an article of this kind, there is no medium between seizing on a few leading features, and remarking on them, and recapitulating an immense number of details, already given in the course of the volume for the current year. The latter plan is not consonant with our views of what such an article ought to be; and though, as we have just hinted, it may be difficult to discover any grand architectural feature to characterise 1838, yet we shall proceed with such as we can find; hoping, at all events, that the brevity of our article will be some apology for the absence of higher qualities.

If the existence of a general spirit for architectural improvement can be characterised as an architectural feature, this spirit may be safely affirmed to be on the increase, not only in London, but through all the provinces. In London, there is not a house rebuilt, that is not erected in a superior style to what it was before; and the renovation of all public buildings is, in general, effected in a very superior style. This system of improved renovation was first rendered conspicuous in the public-houses, and it has since been displayed, in a striking manner, by the banks and the insurance offices; and, more or less, by the shops, in all the principal streets. The employment, in Regent Street and Bond Street, of the Louis XIV. style in shop fronts is one of the latest improvements in this department; and, in combination with the immense panes of plate glass now used for shop windows, and accompanied by rich gilding on a pure white ground, it has a striking and most magnificent appearance.

The introduction of Roman cement, about thirty years ago, has been the foundation of much of the improvement which has taken place in the elevations of street architecture. During

this year and the preceding, a new cement for roofs, terraces, and roads has been introduced, the basis of which is bitumen; but, whether this will lead to any great change, either in buildings, by the introduction of flat roofs, or in streets and roads, by becoming a substitute for either foot or road pavement, remains to be seen. Our opinion of it is, that it promises well; particularly for flat roofs, public footpaths, and garden walks.

The formation of general cemeteries exterior to towns may certainly be considered a feature which has become prominent during the past year. Besides several in the suburbs of London, and one or more in the larger towns, such as Birmingham, Liverpool, and Manchester, they are beginning to be formed in the secondary towns, such as Nottingham, Brighton, &c. We may remark of these cemeteries, that in no one of them, as far as we have observed or heard, are the grounds laid out in an appropriate manner. They are all arranged in imitation of a modern pleasure-ground; the expression of which cannot be considered as in accordance with that of a place of burial; nor are the windings of the walks favourable for economising the ground, which must necessarily be divided into portions of a rectangular form for the graves. Such, however, is the want of invention in persons who are employed to give plans for laying out grounds, whether of cemeteries or public gardens, that they can only repeat in them the winding walks and scattered groups, which they have learned mechanically to adopt in laying out the lawn and pleasure-grounds of a gentleman's villa.

The most striking architectural erections that have taken place throughout England during the last two years are, unquestionably, those connected with engineering. We allude to the magnificent bridges and viaducts erected along the railways, and the lofty engine chimneys, which, forming handsome columns of from 100 ft. to 300 ft. in height, mark the locality of some stationary engine, of waterworks, or of some manufactory. Brick columns of this sort are to be found in almost every part of the metropolis, and in all the great manufacturing towns of England, as well as in those of Scotland. Formerly, no architectural object was seen to rise above private buildings, except the spires and towers of churches; but now, in many parts of the country, and more especially in the north of England, the grand architectural features, which meet the eye of the traveller in the horizon, are the engine chimneys. Perhaps the very highest that has yet been erected in Britain is that at Carlisle, described at p. 165. of the present Volume. With respect to the bridges and viaducts, they are to be found in numbers on every line of railway. Some of the most remarkable are in the neighbourhood of Newcastle, on the railway leading to Carlisle, of which elsewhere, in this Volume, we have given a short notice. Those on

the Birmingham Railway are of extraordinary strength and massiveness; while those on the Bristol Railway are remarkable for their lightness and elegance. The former, those on the Birmingham Railway, may be said to be constructed agreeably to the maxims adopted by the late engineers, Rennie and Telford, of "stronger than strong enough;" and the latter, on what may be called the modern scientific principle of "elegant sufficiency." The most perfect example of this last kind of engineering, which we have seen, is the viaduct over the valley of the Brent, at Hanwell, Middlesex.

In foreign countries, the most striking architectural feature that we are aware of is the Girard College, recently commenced at Philadelphia. It will be an edifice of classical form, of great magnitude, and so massively and solidly constructed, as to be apparently of endless duration. The account of this building, and of Girard, in the present Volume, p. 446., will, we think, be found of great interest in a moral, no less than in an architectural, point of view.

In railroad engineering, the progress which has been made during this year is great; whether we look to the completion of some lines, such as that between London and Birmingham; the progress making by others, such as those from London to Bristol, and from London to Southampton; or the commencement of some, such as those from London to Brighton, and from London to Dover. Our Continental neighbours are making proportionate progress. A railroad from Calais to Paris is in contemplation; and a survey has lately been made for one between Paris and Dieppe, which, when the Brighton railroad is completed, will reduce the time of travelling from London to Paris to one day, instead of three days, and two nights.

The subject of paving streets with asphalte, or cement, has already been alluded to. The substitution of blocks of wood, for blocks of stone, in carriage-ways, which has long been in use, to a limited extent, in Russia and in some parts of Germany, and which has recently been tried in New York, is, also, proposed to be tried in London. Wheel-tracks of stone, formed in imitation of tramroads, for facilitating the progress of carriages on common roads, are now being laid down in some places, with a view, it is said, of trying how far locomotive engines on such roads can be brought into competition with railroad carriages.

The architectural literature of the year exhibits, as usual, a considerable number of books, all more or less valuable. Those which we think likely to become standard works are, Hood's *Treatise on Heating by Hot Water*, Britton's *Architectural Dictionary*, Wood's *Treatise on Railroads*, Nicholson's *Treatise on Projection*, and, perhaps, one or two others. The *Civil Engineer and Architect's Journal*, the first number of which was noticed in

our preceding Volume, p. 578., continues to be carried on with great care and industry, and has deservedly obtained an extensive circulation. Among the books which we have omitted, might, perhaps, have been mentioned Dr. Arnott's *Treatise on Warming and Ventilating*; but, believing that author to have erroneous views of the subject of ventilation, as pointed out in p. 230. of this Volume, we cannot give unqualified commendation to his *Treatise*. Dr. Arnott's stove, however, as far as it concerns economy and heat, we consider to be the most perfect apparatus of the kind that has ever been brought into notice.

In comparing the present Volume of the *Architectural Magazine* with those which have preceded it, we think we are justified in saying that it is not inferior, either in the excellence of the papers which it contains, or in the variety of subjects which have been discussed in it, or brought into notice. One series of papers, commenced in the last Volume and concluded in the present one, we consider to be of particular value to the young architect. We allude to the Essays on the Poetry of Architecture, by Kata Phusin. These essays will afford little pleasure to the mere builder, or to the architect who has no principle of guidance but precedent; but for such readers they were never intended. They are addressed to the young and unprejudiced artist; and their great object is to induce him to think and to exercise his reason. The great bane of modern architecture is, the tendency of all architects to be ruled by precedent. The evil is, perhaps, equally great in all arts of long standing, such as those of agriculture, legislature, &c.; and it will be proportionably difficult to root out. One of the first steps to this desirable end will be, a better general education for all young men whatever; and the avoiding, by parents and guardians, of inducing young men to follow any branch of the fine arts which they do not evince a decided taste for before they leave school. At present, young men are articulated to an architect much in the same manner as they are apprenticed to any mechanical trade. The question is, not whether they are suited for that profession, but whether the income that profession may be expected to afford is suitable for them. In addition to this, the prejudice in favour of ancient architecture, whether classical or Gothic, must be given up, or, at all events, diminished; and, while all the forms and details left us by those who have gone before are free to be used, the combinations in which they are employed must depend for their beauty and effect on intrinsic properties, and not on their having been used in the same combinations before, or on associations connected with them, whether classical or otherwise, which have no connexion with their present use. One of our correspondents, who is at once an architect in extensive employ, and an excellent writer on his art, observes, p. 498., that

one cause of the servile system in modern architecture may be traced to the deference paid to the celebrated *Treatise of Vitruvius*. "Had his [Vitruvius's] MS. been burned," he observes, "before it had been discovered by Poggio, the world would have been no loser; and, certainly, modern architecture would have been a great gainer." There are few architects, we are afraid, who will coincide with our correspondent in this opinion; but we do most heartily. Nevertheless, there are some we trust, of the rising generation, who are able to free themselves from the trammels and architectural bigotry of Vitruvius and his followers; and it is to such alone that we look forward for any real improvement in architecture as an art of design and taste.

With these views, we have endeavoured, in this Magazine, and also in the *Encyclopædia of Cottage, Farm, and Villa Architecture*, to popularise the study of what may be called the metaphysics of architecture. In the earlier Volumes, our own articles on the principles of composition, and those translated from Quatremère de Quincy on the same subject, and, in the present one, the *Philosophy of Architecture*, as translated from Weinbrenner, and the essays already mentioned, by Kata Phusin, together with many extracts under the head of *General Notices*, have all been introduced with a view to this object.

ART. II. *The Poetry of Architecture.* By KATA PHUSIN.

No. 3. THE VILLA. (Concluded.)

V. *The British Villa. Hill, or Brown, Country.* — *Principles of Composition.*

"Vivite contenti casulis et collibus istis." *Juvenal.*

IN the Boulevard des Italiens, just at the turning into the Rue la Paix (in Paris), there stand a few dusky and withered trees, beside a kind of dry ditch, paved at the bottom, into which a carriage can with some difficulty descend, and which affords access (not in an unusual manner) to the ground floor of a large and dreary-looking house, whose passages are dark and confined, whose rooms are limited in size, and whose windows command an interesting view of the dusty trees before mentioned. This is the town residence of one of the Italian noblemen, whose country house has already been figured as a beautiful example of the villas of the Lago di Como. That villa, however, though in one of the loveliest situations that hill, and wave, and heaven ever combined to adorn, and though itself one of the most delicious habitations that luxury ever projected, or wealth procured, is very rarely honoured by the presence of its master; while attractions of a very different nature retain him, winter after winter, in the dark chambers of the Boulevard des Italiens. This

appears singular to the casual traveller, who darts down from the dust and heat of the French capital to the light and glory of the Italian lakes, and finds the tall marble chambers and orange groves, in which he thinks, were he possessed of them, he could luxuriate for ever, left desolate and neglected by their real owner: but, were he to try such a residence for a single twelvemonth, we believe his wonder would have greatly diminished at the end of the time. For the mind of the nobleman in question does not differ from that of the average of men; inasmuch as it is a well-known fact, that a series of sublime impressions, continued indefinitely, gradually pall upon the imagination, deaden its fineness of feeling, and, in the end, induce a gloomy and morbid state of mind, a reaction of a peculiarly melancholy character, because consequent, not upon the absence of that which once caused excitement, but upon the failure of its power. This is not the case with all men; but with those over whom the sublimity of an unchanging scene can retain its power for ever, we have nothing to do; for they know better than any architect can, how to choose their scene, and how to add to its effect: we have only to impress upon them the propriety of thinking before they build, and of keeping their humours under the control of their judgment. It is not of them, but of the man of average intellect, that we are thinking throughout all these papers; and upon him it cannot be too strongly impressed, that there are very few points in a hill country at all adapted for a permanent residence. There is a kind of instinct, indeed, by which men become aware of this, and shrink from the sterner features of hill scenery into the parts possessing a human interest; and thus we find the north side of the Lake Lemán, from Vevay to Geneva, which is about as monotonous a bit of vine country as any in Europe, studded with villas; while the south side, which is as exquisite a piece of scenery as is to be found in all Switzerland, possesses, we think, two. The instinct, in this case, is true; but we frequently find it in error. Thus, the Lake of Como is the resort of half Italy, while the Lago Maggiore possesses scarcely one villa of importance, besides those on the Borromean Islands. Yet the Lago Maggiore is far better adapted for producing and sustaining a pleasurable impression, than that of Como. The first thing, then, which the architect has to do in hill country is, to bring his employer down from heroics to common sense; to teach him that, although it might be very well for a man like Pliny, whose whole spirit and life was wrapt up in that of nature, to set himself down under the splash of a cascade 400 ft. high, such escapades are not becoming in English gentlemen; and that it is necessary, for his own satisfaction, as well as that of others, that he should keep in the most quiet and least pretending corners of the landscape which he has chosen.

Having got his employer well under control, he has two points to consider. First, where he will spoil least; and, secondly, where he will gain most. Now, he may spoil a landscape in two ways; either by destroying an association connected with it, or a beauty inherent in it. With the first barbarism we have nothing to do; for it is one which would not be permitted on a large scale; and, even if it were, could not be perpetrated by any man of the slightest education. No one, having any pretensions to be called a human being, would build himself a house on the meadow of the Rutlin, or by the farm of La Haye Sainte, or on the lonely isle on Loch Katrine. Of the injustice of the second barbarism we have spoken already; and it is the object of this paper to show how it may be avoided, as well as to develop the principles by which we may be guided in the second question; that of ascertaining how much permanent pleasure will be received from the contemplation of a given scene.

It is very fortunate that the result of these several investigations will generally be found the same. The residence which, in the end, is found altogether delightful, will be found to have been placed where it has committed no injury; and, therefore, the best way of consulting our own convenience in the end is, to consult the feelings of the spectator in the beginning.* Now, the first grand rule for the choice of situation is, never to build a villa where the ground is not richly productive. It is not enough that it should be capable of producing a crop of scanty oats or turnips in a fine season; it must be rich and luxuriant, and glowing with vegetative power of one kind or another.† For the very chiefest‡ part of the character of the edifice of pleasure is, and must be, its perfect ease, its appearance of felicitous repose. This it can never have where the nature and expression of the land near it reminds us of the necessity of labour, and

* For instance, one proprietor terrifies the landscape all round him, within a range of three miles, by the conspicuous position of his habitation; and is punished by finding that, from whatever quarter the wind may blow, it sends in some of his plate-glass. Another spoils a pretty bit of crag, by building below it, and has two or three tons of stone dropped through his roof, the first frosty night. Another occupies the turfy slope of some soft lake promontory, and has his cook washed away by the first flood. We do not remember ever having seen a dwelling-house destroying the effect of a landscape, of which, considered merely as a habitation, we should wish to be the possessor.

† We are not thinking of the effect upon the human frame of the air which is favourable to vegetation. Chemically considered, the bracing breeze of the more sterile soil is the most conducive to health, and is practically so, when the frame is not perpetually exposed to it; but the keenness which checks the growth of the plant is, in all probability, trying, to say the least, to the constitution of a resident.

‡ We hope the English language may long retain this corrupt but energetic superlative.

where the earth is niggardly of all that constitutes its beauty and our pleasure ; this it can only have, where the presence of man seems the natural consequence of an ample provision for his enjoyment, not the continuous struggle of suffering existence with a rude heaven and rugged soil. There is nobility in such a struggle, but not when it is maintained by the inhabitant of the villa, in whom it is unnatural, and therefore injurious in its effect. The narrow cottage on the desolate moor, or the stalwart hospice on the crest of the Alps, each leaves an ennobling impression of energy and endurance ; but the possessor of the villa should call, not upon our admiration, but upon our sympathy ; and his function is to deepen the impression of the beauty and the fulness of creation, not to exhibit the majesty of man ; to show, in the intercourse of earth and her children, not how her severity may be mocked by their heroism, but how her bounty may be honoured in their enjoyment.

This position, being once granted, will save us a great deal of trouble ; for it will put out of our way, as totally unfit for villa residence, nine tenths of all mountain scenery ; beginning with such bleak and stony bits of hill side as that which was metamorphosed into something like a forest by the author of *Waverley* ; laying an equal veto on all the severe landscapes of such districts of minor mountain as the Scotch Highlands and North Wales ; and finishing by setting aside all the higher sublimity of Alp and Apennine. What, then, has it left us ? The gentle slope of the lake shore, and the spreading parts of the quiet valley, in almost all scenery ; and the shores of the Cumberland lakes in our own, distinguished as they are by a richness of soil, which though generally manifested only in an exquisite softness of pasture, and roundness of undulation, is sufficiently evident to place them out of the sweeping range of this veto.

Now, as we have only to do with Britain, at present, we shall direct particular attention to the Cumberland lakes, as they are the only mountain district which, taken generally, is adapted for the villa residence, and as every piece of scenery which in other districts is so adapted, resembles them in character and tone.

We noticed, in speaking of the Westmoreland cottage, the feeling of humility with which we are impressed during a mountain ramble. Now, it is nearly impossible for a villa of large size, however placed, not to disturb and interrupt this necessary and beautiful impression, particularly where the scenery is on a very small scale. This disadvantage may be obviated in some degree, as we shall see, by simplicity of architecture ; but another, dependent, on a question of proportion, is inevitable. When an object, in which magnitude is a desirable attribute, leaves an impression, on a practised eye, of less magnitude than it really

possesses, we should place objects beside it, of whose magnitude we can satisfy ourselves, of larger size than that which we are accustomed to; for, by finding these large objects in precisely the proportion to the grand object, to which we *are* accustomed, while we know their actual size to be one to which we are *not* accustomed, we become aware of the true magnitude of the principal feature. But, where the object leaves a true impression of its size on the practised eye, we shall do harm by rendering minor objects either larger or smaller than they usually are. Where the object leaves an impression of greater magnitude than it really possesses, we must render the minor objects smaller than they usually are, to prevent our being undeceived. Now, a mountain of 15,000 ft. high always looks lower than it really is; therefore, the larger the buildings near it are rendered, the better. Thus, in speaking of the Swiss cottage, it was observed that a building of the size of St. Peter's in its place, would exhibit the size of the mountains more truly and strikingly. A mountain 7,000 ft. high strikes its impression with great truth, we are deceived on neither side; therefore, the building near it should be of the average size; and thus the villas of the Lago di Como, being among hills from 6,000 to 8,000 ft. high, are well proportioned, being neither colossal nor diminutive: but a mountain 3,000 ft. high always looks higher than it really is*; therefore, the buildings near it should be smaller than the average. And this is what is meant by the proportion of objects; namely, rendering them of such relative size as shall produce

* This position, as well as the two preceding, is important, and in need of confirmation. It has often been observed, that, when the eye is altogether unpractised in estimating elevation, it believes every point to be lower than it really is; but this does not militate against the proposition, for it is also well known, that the higher the point, the greater the deception. But when the eye is thoroughly practised in mountain measurement, although the judgment, arguing from technical knowledge, gives a true result, the impression on the feelings is always at variance with it, except in hills of the middle height. We are perpetually astonished, in our own country, by the sublime impression left by such hills as Skiddaw, or Cader Idris, or Ben Venue; perpetually vexed, in Switzerland, by finding that, setting aside circumstances of form and colour, the abstract impression of elevation is (except in some moments of peculiar effect, worth a king's ransom) inferior to the truth. We were standing the other day on the slope of the Brevent, above the Prieure of Chamouni, with a companion, well practised in climbing Highland hills, but a stranger among the Alps. Pointing out a rock above the Glacier des Bossons, we requested an opinion of its height. "I should think," was the reply, "I could climb it in two steps; but I am too well used to hills to be taken in in that way; it is at least 40 ft." The real height was 470 ft. This deception is attributable to several causes (independently of the clearness of the medium through which the object is seen), which it would be out of place to discuss here, but the chief of which is the natural tendency of the feelings always to believe objects subtending the same angle to be of the same height. We say the feelings, not the eye; for the practised eye never betrays its possessor, though the due and corresponding mental impression is not received.

the greatest possible impression of those attributes which are most desirable in both. It is not the true, but the desirable, impression which is to be conveyed; and it must not be in one, but in both: the building must not be overwhelmed by the mass of the mountain, nor the precipice mocked by the elevation of the cottage. (Proportion of colour is a question of quite a different nature, dependent merely on admixture and combination.) For these reasons, buildings of a very large size are decidedly destructive of effect among the English lakes: first, because apparent altitudes are much diminished by them; and, secondly, because, whatever position they may be placed in, instead of combining with scenery, they occupy and overwhelm it: for all scenery is divided into pieces, each of which has a near bit of beauty, a promontory of lichened crag, or a smooth swarded knoll, or something of the kind, to begin with. Wherever the large villa comes, it takes up one of these beginnings of landscape altogether; and the parts of crag or wood, which ought to combine with it, become subservient to it, and lost in its general effect; that is, ordinarily, in a general effect of ugliness. This should never be the case: however intrinsically beautiful the edifice may be, it should assist, but not supersede; join, but not eclipse; appear, but not intrude. The general rule by which we are to determine the size is, to select the largest mass which will not overwhelm any object of fine form, within two hundred yards of it; and, if it does not do this, we may be quite sure it is not too large for the distant features: for it is one of Nature's most beautiful adaptations, that she is never out of proportion with herself; that is, the minor details of scenery of the first class bear exactly the proportion to the same species of detail in scenery of the second class, that the large features of the first bear to the large features of the second. Every mineralogist knows that the quartz of the St. Gothard is as much larger in its crystal than the quartz of Snowdon, as the peak of the one mountain overtops the peak of the other; and that the crystals of the Andes are larger than either.* Every artist knows that the boulders of an Alpine foreground, and the leaps of an Alpine stream, are as much larger than the boulders, and as much bolder than the leaps, of a Cumberland foreground and torrent, as the Jungfrau is higher than Skiddaw. Therefore, if we take care of the near effect in any country, we need never be afraid of the distant. For these reasons, the cottage villa, rather than the mansion, is to be preferred among our hills: it has

* This is rather a bold assertion; and we should be sorry to maintain the fact as universal; but the crystals of *almost* all the rarer minerals are larger in the larger mountain; and that altogether independently of the period of elevation, which, in the case of Mont Blanc, is later than that of our own Mendips.

been preferred in many instances, and in too many, with an unfortunate result; for the cottage villa is precisely that which affords the greatest scope for practical absurdity. Symmetry, proportion, and some degree of simplicity, are usually kept in view in the large building; but, in the smaller, the architect considers himself licensed to try all sorts of experiments, and jumbles together pieces of imitation, taken at random from his note-book, as carelessly as a bad chemist mixing elements, from which he may by accident obtain something new, though the chances are ten to one that he obtains something useless. The chemist, however, is more innocent than the architect; for the one throws his trash out of the window, if the compound fail; while the other always thinks his conceit too good to be lost. The great one cause of all the errors in this branch of architecture is, the principle of imitation, at once the most baneful and the most unintellectual, yet perhaps the most natural, that the human mind can encourage or act upon.* Let it once be thoroughly rooted

* In p. 440., we noticed the kind of error most common in amateur designs, and we traced that error to its great first cause, the assumption of the humour, instead of the true character, for a guide; but we did not sufficiently specify the mode in which that first cause operated, by prompting to imitation. By imitation, we do not mean accurate copying, neither do we mean working under the influence of the feelings by which we may suppose the originators of a given model to have been actuated; but we mean the intermediate step of endeavouring to combine old materials in a novel manner. True copying may be disdained by architects, but it should not be disdained by nations; for, when the feelings of the time in which certain styles had their origin have passed away, any examples of the same style will invariably be failures, unless they be copies. It is utter absurdity to talk of building Greek edifices now; no man ever will, or ever can, who does not believe in the Greek mythology; and, precisely by so much as he diverges from the technicality of strict copyism, he will err. But we ought to have pieces of Greek architecture, as we have reprints of the most valuable records, and it is better to build a new Parthenon than to set up the old one. Let the dust and the desolation of the Acropolis be undisturbed for ever; let them be left to be the school of our moral feelings, not of our mechanical perceptions: the line and rule of the prying carpenter should not come into the quiet and holy places of the earth. Elsewhere, we may build marble models for the education of the national mind and eye; but it is useless to think of adopting the architecture of the Greek to the purposes of the Frank: it never has been done, and never will be. We delight, indeed, in observing the rise of such a building as La Madeleine: beautiful, because accurately copied; useful, as teaching the eye of every passer-by. But we must not think of its purpose: it is wholly unadapted for Christian worship; and, were it as bad Greek as our National Gallery, it would be equally unfit. The mistake of our architects in general is, that they fancy they are speaking good English by speaking bad Greek. We wish, therefore, that copying were more in vogue than it is. But imitation, the endeavour to be Gothic, or Tyrolese, or Venetian, without the slightest grain of Gothic or Venetian feeling; the futile effort to splash a building into age, or daub it into dignity, to zigzag it into sanctity, or slit it into ferocity, when its shell is neither ancient nor dignified, and its spirit neither priestly nor baronial; this is the degrading vice of the age; fostered, as if man's reason were but a step between the brains of a kitten and a monkey, in the mixed love of despicable

out, and the cottage villa will become a beautiful and interesting element of our landscape.

So much for size. The question of position need not detain us long, as the principles advanced at page 244. are true generally, with one exception. Beautiful and calm the situation must always be, but, in England, not conspicuous. In Italy, the dwelling of the descendants of those whose former life has bestowed on every scene the greater part of the majesty which it possesses, ought to have a dignity inherent in it, which would be shamed by shrinking back from the sight of men, and majesty enough to prevent such non-retirement from becoming intrusive; but the spirit of the English landscape is simple, and pastoral and mild, devoid, also, of high associations (for, in the Highlands and Wales, almost every spot which has the pride of memory is unfit for villa residence); and, therefore, all conspicuous appearance of its more wealthy inhabitants becomes ostentation, not dignity; impudence, not condescension. Their dwellings ought to be just evident, and no more, as forming part of the gentle animation, and present prosperity, which is the beauty of cultivated ground. And this partial concealment may be effected without any sacrifice of the prospect which the proprietor will insist upon commanding from his windows, and with great accession to his permanent enjoyment. For, first, the only prospect which is really desirable or delightful, is that from the window of the breakfast-room. This is rather a bold position, but it will appear evident on a little consideration. It is pleasant enough to have a pretty little bit visible from the bedrooms; but, after all, it only makes gentlemen cut themselves in shaving, and ladies never think of anything beneath the sun when they are dressing. Then, in the dining-room windows are

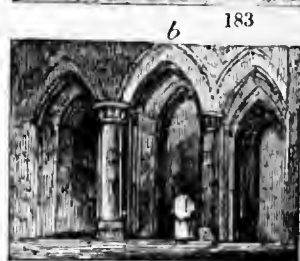
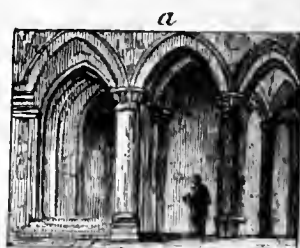
excitement and miserable mimicry. If the English have no imagination, they should not scorn to be commonplace; or, rather, they should remember that poverty cannot be disguised by beggarly borrowing, though it may be ennobled by calm independence. Our national architecture never will improve until our population are generally convinced that in this art, as in all others, they cannot seem what they cannot be. The scarlet coat or the turned-down collar, which the obsequious portrait-painter puts on the shoulders and off the necks of his savage or insane customers, never can make the 'prentice look military, or the idiot poetical; and the architectural appurtenances of Norman embrasure or Veronaic balcony must be equally ineffective, until they can turn shopkeepers into barons, and school girls into Juliets. Let the national mind be elevated in its character, and it will naturally become pure in its conceptions; let it be simple in its desires, and it will be beautiful in its ideas; let it be modest in feeling, and it will not be insolent in stone. For architect and for employer, there can be but one rule; to be natural in all that they do, and to look for the beauty of the material creation as they would for that of the human form, not in the chanceful and changing disposition of artificial decoration, but in the manifestation of the pure and animating spirit which keeps it from the coldness of the grave.

absolutely useless, because dinner is always uncomfortable by daylight, and the weight of furniture effect which adapts the room for the gastronomic rites, renders it detestable as a sitting-room. In the library, people should have something else to do, than looking out of the windows; in the drawingroom, the uncomfortable stillness of the quarter of an hour before dinner may, indeed, be alleviated by having something to converse about at the windows: but it is very shameful to spoil a prospect of any kind, by looking at it when we are not ourselves in a state of corporal comfort and mental good humour, which nobody can be after the labour of the day, and before he has been fed. But the breakfast-room, where we meet the first light of the dewy day, the first breath of the morning air, the first glance of gentle eyes; to which we descend in the very spring and elasticity of mental renovation and bodily energy, in the gathering up of our spirit for the new day, in the flush of our awakening from the darkness and the mystery of faint and inactive dreaming, in the resurrection from our daily grave, in the first tremulous sensation of the beauty of our being, in the most glorious perception of the lightning of our life; there, indeed, our expiation of spirit, when it meets the pulse of outward sound and joy, the voice of bird and breeze and billow, *does* demand some power of liberty, some space for its going forth into the morning, some freedom of intercourse with the lovely and limitless energy of creature and creation. The breakfast-room must have a prospect, and an extensive one; the hot roll and hyson are indiscussable, except under such sweet circumstances. But he must be an awkward architect, who cannot afford an opening to one window without throwing the whole mass of the building open to public view; particularly as, in the second place, the essence of a good window view, is the breaking out of the distant features in little well-composed morceaux, not the general glare of a mass of one tone. Have we a line of lake? the silver water must glance out here and there among the trunks of near trees, just enough to show where it flows; then break into an open swell of water, just where it is widest, or where the shore is prettiest. Have we mountains? their peaks must appear over foliage, or through it, the highest and boldest catching the eye conspicuously, yet not seen from base to summit, as if we wanted to measure them. Such a prospect as this is always compatible with as much concealment as we choose. In all these pieces of management, the architect's chief enemy is the vanity of his employer, who will always want to see more than he ought to see, and than he will have pleasure in seeing, without reflecting how the spectators pay for his peeping.

So much, then, for position. We have now only to settle the

questions of form and colour, and we shall then have closed the most tiresome investigation which we shall be called upon to enter into; inasmuch as the principles which we may arrive at in considering the architecture of defence, though we hope they may be useful in the abstract, will demand no application to native landscape, in which, happily, no defence is now required; and those relating to sacred edifices will, we also hope, be susceptible of more interest than can possibly be excited by the most degraded branch of the whole art of architecture, one hardly worthy of being included under the name; that, namely, with which we have lately been occupied, whose ostensible object is the mere provision of shelter and comfort for the despicable shell within whose darkness and corruption that purity of perception to which all high art is addressed is, during its immaturity, confined.

There are two modes in which any mental or material effect may be increased; by contrast, or by assimilation. Supposing that we have a certain number of features, or existences, under a given influence; then, by subjecting another feature to the same influence, we increase the universality, and therefore the effect, of that influence; but, by introducing another feature, *not* under the same influence, we render the subjection of the other features more palpable, and therefore more effective. For example, let the influence be one of shade (*fig. 183.*), to which a certain number of objects are subjected in *a* and *b*. To *a* we add another feature, subjected to the same influence, and we increase the general impression of shade; to *b* we add the same feature, not subjected to this influence, and we have deepened the effect of shade. Now, the principles by which we are to be guided in the selection of one or other of these means are of great importance, and must be developed before we can conclude the investigation of villa architecture. The impression produced by a given effect or influence depends upon its degree and its duration. Degree always means the proportionate energy exerted. Duration is either into time, or into space, or into both. The duration of colour is in space alone, forming what is commonly called extent. The duration of sound is in space and time; the space being in the size of the waves of air, which give depth to the tone. The duration of mental emotion is in time alone. Now, in all influences, as is the degree, so is the impression; as is the duration, so is the effect of the impression; that is, its permanent operation



upon the feelings, or the violence with which it takes possession of our own faculties and senses, as opposed to the abstract impression of its existence without such operation on our own essence. For example, the natural tendency of darkness or shade is, to induce fear or melancholy. Now, as the degree of the shade, so is the abstract impression of the existence of shade; but, as the duration of shade, so is the fear or melancholy excited by it. Consequently, when we wish to increase the abstract impression of the power of any influence over objects with which we have no connexion, we must increase degree; but, when we wish the impression to produce a permanent effect upon ourselves, we must increase duration. Now, degree is always increased by contrast, and duration by assimilation. A few instances of this will be sufficient. Blue is called a cold colour, because it induces a feeling of coolness to the eye, and is much used by nature in her cold effects. Supposing that we have painted a storm scene, in desolate country, with a single miserable cottage somewhere in front; that we have made the atmosphere and the distance cold and blue, and wish to heighten the comfortless impression. There is an old rag hanging out of the window: shall it be red or blue? If it be red, the piece of warm colour will contrast strongly with the atmosphere; will render its blueness and chilliness immensely more apparent; will increase the *degree* of both, and, therefore, the abstract impression of the existence of cold. But, if it be blue, it will bring the iciness of the distance up into the foreground; will fill the whole visible space with comfortless cold; will take away every relief from the desolation; will increase the *duration* of the influence, and, consequently, will extend its operation into the mind and feelings of the spectator, who will shiver as he looks. Now, if we are painting a *picture*, we shall not hesitate a moment: in goes the red; for the artist, while he wishes to render the actual impression of the presence of cold in the landscape as strong as possible, does not wish that chilliness to pass over into, or affect, the spectator, but endeavours to make the combination of colour as delightful to his eye and feelings as possible.* But, if we are painting a *scene* for theatrical representation, where deception is aimed at, we shall be as decided in our proceeding on the opposite principle: in goes the blue; for we wish the idea of cold to pass over into the spectator, and make him so uncomfortable as to permit his fancy to place him distinctly in the place we desire, in the actual scene. Again, Shakspeare has been blamed by some few critical asses for the raillery of Mercutio, and the

* This difference of principle is one leading distinction between the artist, properly so called, and the scene, diorama, or panorama painter.

humour of the nurse, in *Romeo and Juliet*; for the fool in *Lear*; for the porter in *Macbeth*; the grave-diggers in *Hamlet*, &c.; because, it is said, these bits interrupt the tragic feeling. No such thing; they enhance it to an incalculable extent; they deepen its *degree*, though they diminish its *duration*. And what is the result? that the impression of the agony of the individuals brought before us is far stronger than it could otherwise have been, and our sympathies are more forcibly awakened; while, had the contrast been wanting, the impression of pain would have come over into ourselves; our selfish feeling, instead of our sympathy, would have been awakened; the conception of the grief of others diminished; and the tragedy would have made us very uncomfortable, but never have melted us to tears, or excited us to indignation. When he, whose merry and satirical laugh rung in our ears the moment before, faints before us, with “A plague o’ both your houses, they have made worms’ meat of me,” the acuteness of our feeling is excessive: but, had we not heard the laugh before, there would have been a dull weight of melancholy impression, which would have been painful, not affecting. Hence, we see the grand importance of the choice of our means of enhancing effect; and we derive the simple rule for that choice; namely, that, when we wish to increase abstract impression, or to call upon the sympathy of the spectator, we are to use contrast; but, when we wish to extend the operation of the impression, or to awaken the selfish feelings, we are to use assimilation.

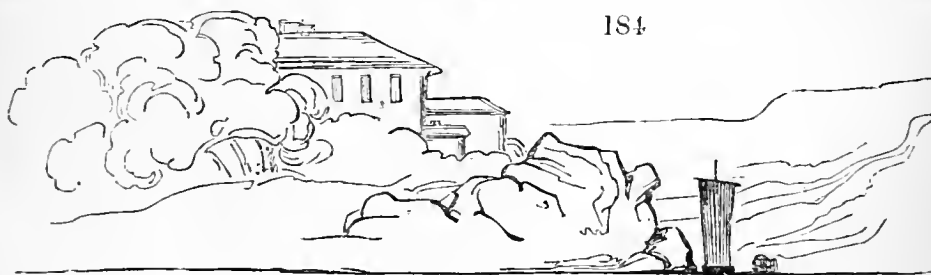
This rule, however, becomes complicated, where the feature of contrast is not altogether passive; that is, where we wish to give a conception of any qualities inherent in that feature, as well as in what it relieves; and, besides, it is not always easy to know whether it will be best to increase the abstract idea, or its operation. In most cases, energy, the degree of influence, is beauty; and, in many, the duration of influence is monotony. In others, duration is sublimity, and energy painful: in a few, energy and duration are attainable and delightful together. It is impossible to give rules for judgment in every case; but the following points must always be observed: — 1. When we use contrast, it must be natural, and likely to occur. Thus, the contrast in tragedy is the natural consequence of the character of human existence: it is what we see and feel every day of our lives. When a contrast is unnatural, it destroys the effect it should enhance. Canning called on a French refugee in 1794. The conversation naturally turned on the execution of the queen, then a recent event. Overcome by his feelings, the Parisian threw himself upon the ground, exclaiming, in an agony of tears, “*La bonne reine ! la pauvre reine !*” Presently he sprang up, exclaiming, “*Cependant, Monsieur, il faut vous faire voir mon*

petit chien danser." This contrast, though natural in a Parisian, was unnatural in the nature of things, and therefore injurious.

2dly. When the general influence, instead of being external, is an attribute or energy of the thing itself, so as to bestow on it a permanent character, the contrast which is obtained by the absence of that character is injurious and becomes what is called an interruption of the unity. Thus, the raw and colourless tone of the Swiss cottage, noticed at page 60., is an injurious contrast to the richness of the landscape, which is an inherent and necessary energy in surrounding objects. So, the character of Italian landscape is curvilinear; therefore, the outline of the buildings entering into its composition must be arranged on curvilinear principles, as investigated at page 343.

3dly. But, if the pervading character can be obtained in the single object by different means, the contrast will be delightful. Thus, the elevation of character which the hill districts of Italy possess by the magnificence of their forms, is transmitted to the villa by its dignity of detail, and simplicity of outline; and the rectangular interruption to the curve of picturesque blue country, partaking of the nature of that which it interrupts, is a contrast giving relief and interest, while any Elizabethan acute angles, on the contrary, would have been a contrast obtained by the absence of the pervading energy of the universal curvilinear character, and therefore improper.

4thly. When the general energy, instead of pervading simultaneously the multitude of objects, as with one spirit, is independently possessed and manifested by every individual object, the



result is repetition, not unity: and contrast is not merely agreeable, but necessary. Thus, in *fig. 184.* the number of objects,



185

forming the line of beauty, is pervaded by one simple energy; but in *fig. 185.* that energy is separately manifested in each,

and the result is painful monotony. Parallel right lines, without grouping, are always liable to this objection ; and, therefore, a distant view of a flat country is never beautiful, unless its horizontals are lost in richness of vegetation, as in Lombardy ; or broken with masses of forest, or with distant hills. If none of these interruptions take place, there is immediate monotony, and no introduction can be more delightful than such a tower in the distance as Strasburg, or, indeed, than any architectural combination of verticals. Peterborough is a beautiful instance of such an adaptation. It is always, then, to be remembered that repetition is not assimilation.

5thly. When any attribute is necessarily beautiful, that is, beautiful in every place and circumstance, we need hardly say that the contrast consisting in its absence is painful. It is only when beauty is local or accidental that opposition may be employed.

6thly. The *edge* of all contrasts, so to speak, should be as soft as is consistent with decisive effect. We mean, that a gradual change is better than instantaneous transfiguration ; for, though always less effective, it is more agreeable. But this must be left very much to the judgment.

7thly. We must be very careful in ascertaining whether any given contrast is obtained by freedom from external, or absence of internal, energy, for it is often a difficult point to decide. Thus, the peace of the Alpine valley might, at first, seem to be a contrast caused by the want of the character of strength and sublimity manifested in the hills ; but it is really caused by the freedom from the general and external influence of violence and desolation.

These, then, are principles applicable to all arts, without a single exception, and of particular importance in painting and architecture. It will sometimes be found that one rule comes in the way of another ; in which case, the most important is, of course, to be obeyed ; but, in general, they will afford us an easy means of arriving at certain results, when, before, our conjectures must have been vague and unsatisfactory. We may now proceed to determine the most proper *form* for the mountain villa of England.

We must first observe the prevailing lines of the near hills : if they are vertical, there will most assuredly be monotony, for the vertical lines of crag are never grouped, and accordingly, by our fourth rule, the prevailing lines of our edifice must be horizontal. In *fig. 186.*, which is a village half-way up the Lake of Thun, the tendency of the hills is vertical ; this tendency is repeated by the buildings, and the composition becomes thoroughly bad : but, at p. 246. *fig. 86.*, we have the same vertical tendency in the hills, while the grand lines of the buildings are horizontal, and the

183

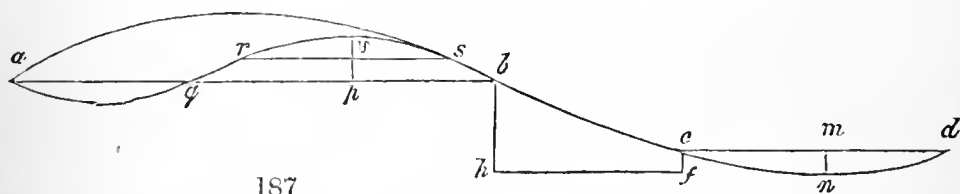


composition is good. But, if the prevailing lines of the near hills be curved (and they will be either curved or vertical), we must not interrupt their character, for the energy is then pervading, not individual; and, therefore, our edifice must be rectangular. In both cases, therefore, the grand outline of the villa is the same; but in the one we have it set off by contrast, in the other by assimilation; and we must work out in the architecture of each edifice the principle on which we have begun. Commencing with that in which we are to work by contrast: the vertical crags must be the result of violence, and the influence of destruction, of distortion, of torture, to speak strongly, must be evident in their every line. We free the building from this influence, and give it repose, gracefulness, and ease; and we have a contrast of feeling as well as of line, by which the desirable attributes are rendered evident in both objects, while the *duration* of neither energy being allowed, there can be no disagreeable effect upon the spectator, who will not shrink from the terror of the crags, nor feel a want of excitement in the gentleness of the building.

2dly. Solitude is powerful and evident in its effect on the distant hills, therefore, the effect of the villa should be joyous and life-like (not flippant, however, but serene); and, by rendering it so, we shall enhance the sublimity of the distance, as we showed in speaking of the Westmoreland cottage; and, therefore, we may introduce a number of windows with good effect, pro-

vided that they are kept in horizontal lines, and do not disturb the repose which we have shown to be necessary.

These three points of contrast will be quite enough : there is no other external influence from which we can free the building, and the pervading energy must be communicated to it, or it will not harmonise with our feelings; therefore, before proceeding, we had better determine how this contrast is to be carried out in detail. Our lines are to be horizontal; then the roof must be as flat as possible. We need not think of snow, because, however much we may slope the roof, it will not slip off from the material which, here, is the only proper one; and the roof of the cottage is always very flat, which it would not be if there were any inconvenience attending such a form. But, for the sake of the second contrast, we are to have gracefulness and ease, as well as horizontality. Then we must break the line of the roof into different elevations, yet not making the difference great, or we shall have visible verticals. And this must not be done at random. Take a flat line of beauty, $a d$, *fig. 187*, for the length



187

of the edifice. Strike $a b$ horizontally from a , $c d$ from d ; let fall the verticals; make $c f$ equal $m n$, the maximum; and draw $h f$. The curve should be so far continued as that $h f$ shall be to $c d$ as $c d$ to $a b$. Then we are sure of a beautifully proportioned form. Much variety may be introduced by using different curves; joining paraboles with cycloids, &c.: but the use of curves is always the best mode of obtaining good forms. Further ease may be obtained by added combinations. For instance, strike another curve ($a q b$) through the flat line $a b$; bisect the maximum $v p$, draw the horizontal $r s$, (observing to make the largest maximum of this curve towards the smallest maximum of the great curve, to restore the balance), join $r q$, $s b$, and we have another modification of the same beautiful form. This may be done in either side of the building, but not in both. Then, if the flat roof be still found monotonous, it may be interrupted by garret windows, which must not be gabled, but turned with the curve $a b$, whatever that may be. This will give instant humility to the building, and take away any vestiges of Italian character which might hang about it, and which would be wholly out of place. The windows may have tolerably broad architraves, but no cornices; an ornament both haughty and classical in its effect, and, on both accounts, improper here. They should be in level

lines, but grouped at unequal distances, or they will have a formal and artificial air, unsuited to the irregularity and freedom around them. Some few of them may be arched, however, with the curve *a b*, the mingling of the curve and the square being very graceful. There should not be more than two tiers and the garrets, or the building will be too high.

So much for the general outline of the villa, in which we are to work by contrast. Let us pass over to that in which we are to work by assimilation, before speaking of the material and colour which should be common to both.

The grand outline must be designed on exactly the same principles; for the curvilinear proportions, which were opposition before, will now be assimilation. Of course, we do not mean to say that every villa in a hill country should have the form *a b c d*; we should be tired to death if they had: but we bring forward that form, as an example of the agreeable result of the principles on which we should always work, but whose result should be the same in no two cases. A modification of that form, however, will frequently be found useful; for, under the depression *h f*, we may have a hall of entrance and of exercise, which is a requisite of extreme importance in hill districts, where it rains three hours out of four all the year round; and under *c d* we may have the kitchen, servants' rooms, and coach-house, leaving the large division quiet and comfortable.

Then, as in the curved country there is no such distortion as that before noticed, no such evidence of violent agency, we need not be so careful about the appearance of perfect peace, we may be a little more dignified and a little more classical. The windows may be symmetrically arranged; and, if there be a blue and undulating distance, the upper tier may even have cornices; narrower architraves are to be used; the garrets may be taken from the roof, and their inmates may be accommodated in the other side of the house; but we must take care, in doing this, not to become Greek. The material, as we shall see presently, will assist us in keeping unclassical; and not a vestige of column or capital must appear in any part of the edifice. All should be pure, but all should be English; and there should be here, as elsewhere, much of the utilitarian about the whole, suited to the cultivated country in which it is placed.

It will never do to be speculative or imaginative in our details, on the supposition that the tendency of fine scenery is to make every body imaginative and enthusiastic. Enthusiasm has no business with Turkey carpets or easy chairs; and the very preparation of comfort for the body, which the existence of the villa supposes, is inconsistent with the supposition of any excitement of mind: and this is another reason for keeping the domestic building in richly productive country. Nature has set aside her

sublime bits for us to feel and think in ; she has pointed out her productive bits for us to sleep and eat in ; and, if we sleep and eat amongst the sublimity, we are brutal ; if we poetise amongst the cultivation, we are absurd. There are the time and place for each state of existence, and we should not jumble that which Nature has separated. She has addressed herself, in one part, wholly to the mind, there is nothing for us to eat but bilberries, nothing to rest upon but rock, and we have no business to concoct pic-nics, and bring cheese, and ale, and sandwiches, in baskets, to gratify our beastly natures, where Nature never intended us to eat (if she had, we needn't have brought the baskets). In the other part, she has provided for our necessities ; and we are very absurd, if we make ourselves fantastic, instead of comfortable. Therefore, all that we ought to do in the hill villa is, to adapt it for the habitation of a man of the highest faculties of perception and feeling ; but only for the habitation of his hours of common sense, not of enthusiasm ; it must be his dwelling as a man, not as a spirit ; as a thing liable to decay, not as an eternal energy ; as a perishable, not as an immortal.

Keeping, then, in view these distinctions of form between the two villas, the remaining considerations relate equally to both.

We have several times alluded to the extreme richness and variety of hill foregrounds, as an internal energy to which there must be no contrast. Rawness of colour is to be especially avoided, but so, also, is poverty of effect. It will, therefore, add much to the beauty of the building, if, in any conspicuous and harsh angle, or shadowy moulding, we introduce a wreath of carved leaf-work, in stone, of course. This sounds startling and expensive ; but we are not thinking of expense : what ought to be, not what can be afforded, is the question. Besides, when all expense in shamming castles, building pinnacles, and all other fantasticisms, has been shown to be injurious, that which otherwise would have been wasted in plaster battlements, to do harm, may surely be devoted to stone leafage, to do good. Now, if there be too much, or too conspicuous, ornament, it will destroy simplicity and humility, and every thing which we have been endeavouring to get ; therefore, the architect must be careful, and had better have immediate recourse to that natural beauty with which he is now endeavouring to assimilate. When Nature determines on decorating a piece of projecting rock, she begins with the bold projecting surface, to which the eye is naturally drawn by its form, and (observe how closely she works by the principles which were before investigated) she finishes this with lichens and mingled colours, to a degree of delicacy, which makes us feel that we never can look close enough ; but she puts in not a single mass of form to attract the eye, more than the grand outline renders necessary. But, where the rock joins the ground,

where the shadow falls, and the eye is not attracted, she puts in bold forms of ornament, large leaves and grass, bunches of moss and heather, strong in their projection, and deep in their colour. Therefore, the architect must act on precisely the same principle: his outward surfaces he may leave the wind and weather to finish in their own way; but he cannot allow Nature to put grass and weeds into the shadows; *ergo*, he must do it himself; and, whenever the eye loses itself in shade, wherever there is a dark and sharp corner, there, if he can, he should introduce a wreath of flower-work. The carving will be preserved from the weather by this very propriety of situation: it would have mouldered away, had it been exposed to the full drift of the rain, but will remain safe in the crevices where it is required; and, also, it will not injure the general effect, but will lie concealed until we approach, and then rise up, as it were, out of the darkness, to its duty; bestowing on the dwellings that finish of effect which is manifested around them, and gratifying the natural requirement of the mind for the same richness in the execution of the designs of men, which it has found on a near approach lavished so abundantly, in a distant view subdued so beautifully into the large effect of the designs of nature.

Of the ornament itself, it is to be observed that it is not to be what is properly called architectural *decoration* (that which is “decorous,” becoming, or suitable to); namely, the combination of minor forms, which repeat the lines, and partake of the essence of the grand design, and carry out its meaning and life into its every member: but it is to be true sculpture; the presenting of a pure ideality of form to the eye, which may give perfect conception, without the assistance of colour: it is to be the stone image of vegetation, not botanically accurate, indeed, but sufficiently near to permit us to be sure of the intended flower or leaf. Not a single line of any other kind of ornament should be admitted, and there should be more leafage than flower-work, as it is the more easy in its flow and outline. Deep relief need not be attempted, but the edges of the leafage should be clearly and delicately defined. The cabbage, the vine, and the ivy are the best and most beautiful leaves: oak is a little too stiff, otherwise good. Particular attention ought to be paid to the ease of the stems and tendrils: such care will always be repaid. And it is to be especially observed, that the carving is not to be arranged in garlands or knots, or any other formalities, as in Gothic work; but the stalks are to rise out of the stone, as if they were rooted in it, and to fling themselves down where they are wanted, disappearing again in light sprays, as if they were still growing. All this will require care in designing; but, as we have said before, we can always do without decoration; but, if we have it,

it *must* be well done. It is not of the slightest use to economise; every farthing improperly saved does a shilling's worth of damage; and that is getting a bargain the wrong way. When one branch or group balances another, they *must* be different in composition. The same group may be introduced several times in different parts, but not when there is correspondence, or the effect will be unnatural; and it can hardly be too often repeated, that the *ornament* must be kept out of the general effect, must be invisible to all but the near observer, and, even to him, must not become a necessary part of the design, but must be sparingly and cautiously applied, so as to appear to have been thrown in by chance here and there, as Nature would have thrown in a bunch of herbage, affording adornment without concealment, and relief without interruption.

So much for form. The question of colour has already been discussed at some length, in speaking of the cottage; but it is to be noticed, that the villa, from the nature of its situation, gets the higher hills back into a distance which is three or four times more blue than any piece of scenery entering into combination with the cottage; so that more warmth of colour is allowable in the building, as well as greater cheerfulness of effect. It should not look like stone, as the cottage should, but should tell as a building on the mind as well as the eye. White, therefore, is frequently allowable in small quantities, particularly on the border of a large and softly shored lake, like Windermere and the foot of Loch Lomond; but cream-colour, and putty-colour, and the other varieties of plaster colour, are inexcusable. If more warmth is required by the situation than the sun will give on white, the building should be darkened at once. A warm rich grey is always beautiful in any place and under every circumstance; and, in fact, unless the proprietor likes to be kept damp like a travelling codfish, by trees about his house and close to it (which, if it be white, he must have, to prevent glare), such a grey is the only colour which will be beautiful, or even innocent. The difficulty is to obtain it; and this naturally leads to the question of material. If the colour is to be white, we can have no ornament, for the shadows would make it far too conspicuous, and we should get only tawdriness. The simple forms may be executed in anything that will stand wet; and the roofs, in all cases, should be of the coarse slate of the country, as rudely put on as possible. They must be kept clear of moss and conspicuous vegetation, or there will be an improper appearance of decay; but the more lichenous the better, and the rougher the slate the sooner it is coloured. If the colour is to be grey, we may use the grey primitive limestone, which is not ragged on the edges, without preparing the blocks too smoothly; or the more compact and pale-coloured slate, which is frequently done in Westmore-

land ; and execute the ornaments in any very coarse dark marble. Greenstone is an excellent rock, and has a fine surface, but it is unmanageable. The greyer granites may often be used with good effect, as well as the coarse porphyries, when the grey is to be particularly warm. An outward surface of a loose block may be often turned to good account in turning an angle ; as the colours which it has contracted by its natural exposure will remain on it without inducing damp. It is always to be remembered, that he who prefers neatness to beauty, and who would have sharp angles, and clean surfaces, in preference to curved outlines and lichenous colour, has no business to live among hills.

Such, then, are the principal points to be kept in view in the edifice itself. Of the mode of uniting it with the near features of foliage and ground, it would be utterly useless to speak : it is a question of infinite variety, and involving the whole theory of composition, so that it would take up volumes to develope principles sufficient to guide us to the result which the feeling of the practised eye would arrive at in a moment. The inequalities of the ground, the character and colour of those inequalities, the nature of the air, the exposure, and the consequent fall of the light, the quantity and form of near and distant foliage, all have their effect on the design, and should have their influence on the designer, inducing, as they do, a perfect change of circumstance in every locality. Only one general rule can be given, and that we repeat. The house must NOT be a noun substantive, it must not stand by itself, it must be part and parcel of a proportioned whole : it must not even be seen all at once ; and he who sees one end should feel that, from the given data, he can arrive at no conclusion respecting the other, yet be impressed with a feeling of a universal energy, pervading with its beauty of unanimity all life and all inanimation, all forms of stillness or motion, all presence of silence or of sound.

Thus, then, we have reviewed the most interesting examples of existing villa architecture, and we have applied the principles derived from those examples to the landscape of our own country. Throughout, we have endeavoured to direct attention to the spirit, rather than to the letter, of all law, and to exhibit the beauty of that principle which is embodied in the line with which we have headed this concluding paper ; of being satisfied with national and natural forms, and not endeavouring to introduce the imaginations, or imitate the customs, of foreign nations, or of former times. All imitation has its origin in vanity, and vanity is the bane of architecture. And, as we take leave of them, we would, once for all, remind our English sons of Sempronius “*qui villas attollunt marmore novas,*” *novas* in the full sense of the word, and who are setting all English feeling and all natural principles at defiance, that it is only the *bourgeois gentilhomme* who will

wear his dressing-gown upside down, “parceque toutes les personnes de qualité portent les fleurs en en-bas.”

Oxford, October, 1838.

ART. III. *Design for a Villa comprising Two distinct Residences.*
By W. H. LEEDS.

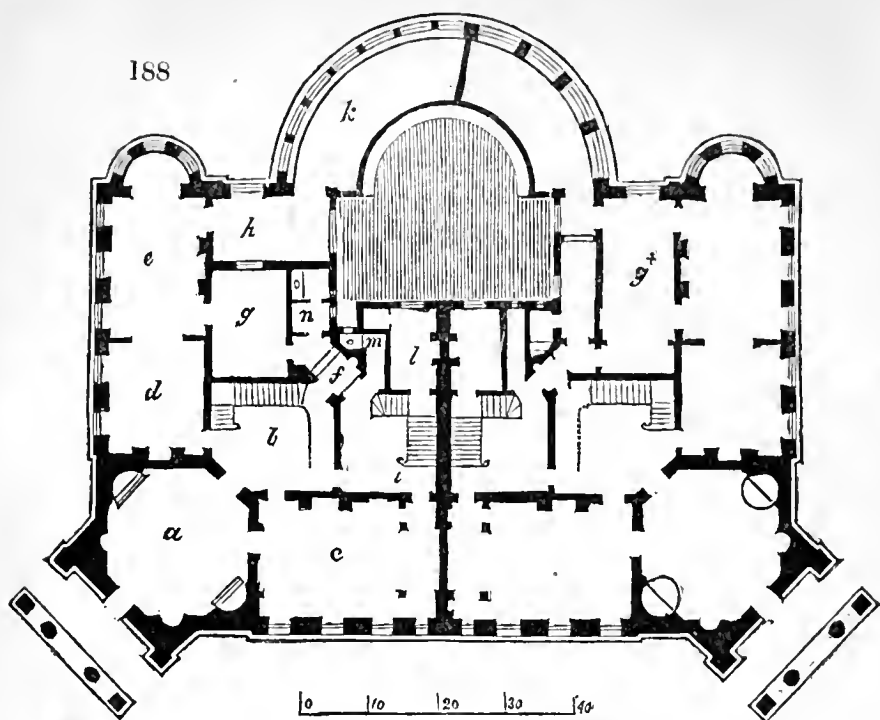
USUAL as the practice has become of erecting a range of houses, forming one general architectural design, or façade, it is by no means common to find two, or perhaps three, houses grouped together in such manner as to retain the villa character, which is entirely lost sight of in buildings of the first-mentioned class. The lengthened ranges of houses, distinguished by the popular, yet not remarkably appropriate, title of terraces, whatever they may be in other respects, are evidently street architecture; of the town, townish. At the very first glance do they discover themselves to be such, having nothing whatever of the physiognomy of a single large mansion; since the number of stories and windows, and their minuteness in comparison with the entire mass, would effectually contradict the idea of a spacious and magnificent edifice: besides which, there is nothing in the arrangement or outline to favour it, even when the whole is beheld at such distance that the individual features are hardly recognisable. The whole, then, seldom presents more than one monotonous surface, without the variety arising either from breaking it by means of projecting and receding masses, or by some portions being made conspicuously loftier than the rest. Not even the roofs nor the chimneys serve to keep up a momentary deception; instead of being grouped together at considerable intervals, and showing themselves as they would do if rising up over parts in the rear of the building, these latter exhibit themselves just as they do in our streets, being placed in the party walls between the separate houses, and visibly demarcating the extent of frontage belonging to each. If, on the one hand, ranges of houses of this description are, in fact, no more than the side of a street; on the other, they are, as far as architectural effect is concerned, seen under disadvantages they would not be liable to did they actually form one. In that case, all the fronts being in one unbroken line would not offend the eye as a defect, because a natural and unavoidable circumstance; and, in the next place, the proportion of height would be measured by that of width of the street, not as now, by the extent of the entire mass of building, which is generally so great as to overpower what would else pass for loftiness. Within certain limits, and with features in some degree proportioned to the size of the whole, an air of stateliness might be produced, and consistently kept up; but, as for the most part practised, such

long-drawn stretched-out ranges of building show themselves at once to be only a number of ordinary-sized houses put together; and, if so intended, no more resemble a huge edifice, than a file of soldiers does a giant.

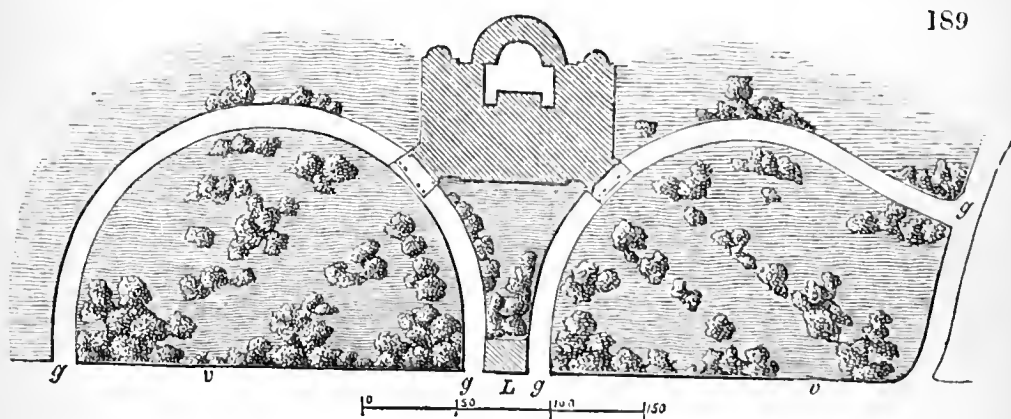
Although not so indispensably belonging to the present subject but that they might have been omitted, the above remarks are sufficiently connected with it to be admissible, by way of preface, to what is intended to exemplify a combination of a similar nature, more effective in architectural character, notwithstanding it is upon a very much more limited scale; the accompanying design being for two villas, so disposed as to secure to each nearly all the advantages of a detached and independent residence, at the same time that, from being thus united, they derive importance as an object, which neither of them would possess singly. With this view, instead of making merely one general elevation, and confining ornamental design to that alone, each side constitutes a front, and the two houses may be said to stand back to back rather than side by side, the two principal sitting-rooms in each being in opposite fronts of the building; and, in the next place, the entrances are turned diagonally, and placed at the corners of the road front; by which means, that belonging to one villa is hardly in any degree exposed to the observation of those who occupy the other. Besides that such position of a portico would be strikingly novel in itself, if not exactly unprecedented, it appears to have one or two circumstances in its favour. In the first place, instead of looking as if merely stuck on to a front, it thus becomes a distinct elevation. Secondly, its obliquity with regard to those adjoining it would occasion great variety, even when the portico itself was viewed directly in front; since the latter would appear to come boldly forward, and the other sides to recede obliquely from it. In the present case, such effect would be very decided, because here the adjoining elevations are not continued quite up to the roof, but a space left between them and the upper part of the building behind, as is shown in the plan of the chamber floor *fig.* 190.), and in the elevations*, where mass of shadow is obtained in consequence. Thirdly, owing to the portico being so turned, carriages can drive under it, without passing close by the windows of the sitting-rooms.

This last-mentioned circumstance is clearly pointed out by the plan *fig.* 189., which shows the approaches from the road, and the carriage drive to each house, forming a continued sweep which passes under the portico. Directly facing the road front (here

* The sections and elevations intended to illustrate this design are not given, on account of the expense that would have attended so many engravings, and the space they would have occupied, unless they had been so much reduced as to render them both very difficult of execution, and unsatisfactory in themselves.



supposed to be towards the north, the conservatory being on the opposite side) would be a lodge (*L*), either common to both residences, or a double one, which, with the gate on each side of it, might be formed into one architectural composition, and be made a pleasing object from the houses. At *v* is a vista or avenue left



open in a direct line to each portico, so as fully to exhibit that part of the building, while the houses would be more or less screened from the road, not only by their position in regard to it, but by the shrubberies and trees flanking the avenue. Either the carriage drive must have a gradual ascent to the porticoes, or the ground must be made to slope down for a few yards to three of the fronts, so as to admit of the basement windows being above it; unless, indeed, sunk areas should be preferred, or thought

sufficient for lighting the offices below the ground floor. Which ever of the two former modes should be adopted, it would be necessary there should be a balustrade, or other parapet, joining to the portico, as the road there would be some feet higher than the adjoining ground. Within the grounds, and close by the lodge, would be a private path, leading to the basement or servants' entrance to each house, which would be by a porch ; that is, two porches, placed back to back, which, therefore, as the entrances are at the sides, merely show themselves as a projection in the elevation of the road front. From this, a wall of about the same height would be carried in a direct line to the lodge, in order to separate the grounds on that side as much as possible ; yet, being comparatively in a hollow, and otherwise concealed by shrubberies, such division, on the level of the basement, would interfere very little with the architectural effect of the front. One objection, very likely to be here started, is, that two porticoes distinctly indicate the building to consist of two houses. Most indisputably they do so ; still, it is conceived, they serve rather to aid than at all to detract from the character of the *ensemble* as an architectural object, while they do not in any respect contradict the intention of the design.

Each of the other elevations adjoining one of the porticoes is similar in style to the preceding, differing from it merely in not being so extended, having only five windows on a floor.

In regard both to arrangement and dimensions of rooms, one house is a fac-simile of the other ; the sole difference being that the plan is transposed, so that the rooms which in one are on the right hand of the entrance, are, in the other, on the left : it will, therefore, be better to speak only as of one, in describing the plan.

The portico, being intended for carriages, is necessarily carried up the entire height, as otherwise sufficient width for that purpose could not be obtained, without making the side intercolumns offensively wide, with the choice between two other defects : either to have those in front equally out of proportion ; or, if not, to submit to a degree of disparity equally offensive in itself, and rendering the excess of width in the side intercolumns more intolerable by means of contrast. In the lower part of the portico there would be no windows, nor above would there be more than one ; namely, that over the door, which is shown in the section * through the vestibule and staircase. The vestibule itself (*a* in *fig.* 188.) is an octagon, 20 ft. in diameter, having an open doorway facing that from the portico, through which is seen the staircase ; and beyond that, through another doorway, a niche containing a statue, which serves as an ornamental termination thus obtained in a direct line from the entrance. Besides what light would be obtained from the staircase ; this vestibule would be lighted by the glazed

domical roofs to the two large semicircular recesses, each of which forms a side of the octagon, and also serves (as is shown by the section of the vestibule through them) to admit light into that part of the basement beneath this entrance hall. Within each of these recesses would be three small niches with casts, which, in that situation, with the light falling immediately upon them, would have a pleasing and brilliant effect. In addition to these, there might be lesser niches beneath them, somewhat below the level of the floor, so as to be seen by a person when standing at the railing. This latter should be brought forward about a foot from the antæ, both in order to prevent persons from looking over to the bottom of the space beneath, and to afford room for flower-pots and plants. In fact, it would, perhaps, be better were these railings to make the segment of a circle on the floor, described in one half of the plan, thereby preventing persons from approaching to the aperture so near as they otherwise would be able to do. By the same section, it will be seen that the frieze above the openings of these recesses forms a smaller opening, which would be filled up with a panel either of stained glass or transparent painting; for which purpose a cameo style, with the figures relieved by a somewhat darker ground, would be very suitable, because the light admitted through such a surface would be subordinate to that thrown down into the recess itself.

Passing onward from this vestibule to the staircase (*b*), we should there enter either the dining-room (*c*), or the morning-room (*d*), and beyond that the drawingroom (*e*); which two last-mentioned apartments communicate together by folding doors, and give an extent of 44 ft. from the fireplace at the end of the one to the extremity of the other, including the semicircular bay. Yet, the further room may be gained without converting the first one into a thoroughfare on every occasion, by means of the small corridor *f*, and the lobby, or anteroom, *g*; both which are capable of being rendered attractive and striking parts of the interior in themselves, and, at the same time, to enhance the general effect and character of the whole interior. As respects the corridor, in addition to the niche and statue seen from the vestibule, and which would seem to announce an approach to something in this direction, the walls of this little *piece* might be painted in imitation of granite or porphyry, and the door opening to the back staircase (*i*) might be glazed with ground glass, exhibiting a rich-coloured pattern on a white surface. So, also, might the one belonging to the anteroom; or, in order to admit more light into that darker angle, that door might be allowed to have tinted transparent glass of an amber colour mixed with other warm hues, the room it opens into not being intended as a sitting-room, or to have the character of one. Proceeding to the draw-

ingroom in this direction, the visiter would here catch a view into the conservatory, and through that into the garden. While the breakfast-room, or smaller drawingroom, would thus be relieved from the inconvenience of being at all times a thoroughfare to the other, the approach to the latter, just described, would in some respects be preferable even as that for strangers, as being more varied and lengthened, and, consequently, favouring the idea of extent, combined with a certain picturesque intricacy; nor, perhaps, were a stranger who had previously been in the breakfast-room only, to be conducted into the drawingroom by this route, would he be aware that the two were *en suite*, but imagine that the folding doors communicated with some other apartment.

As the lobby, or anteroom, would have only a borrowed light, from a French window or glazed door opening into the conservatory, its comparative obscurity would serve to render the first view of the drawingroom all the more effective and piquant; while the contrast as to size would give the other an air of spaciousness. Yet, although this little anteroom would not have much light, it would not need, on that account, to be of a sombre dismal character: on the contrary, it might be rendered quite the reverse, quite a pictorial *bit* in regard to expression and architectural effect, inasmuch as its partial obscurity would come greatly in aid of them, by the relief arising from depth and mass of shadow. In a sitting-room, the want of light is a defect, because attended with inconvenience; but in a case like the present, instead of being attended with any disadvantage, it is rather desirable, and ought rather to be made the most of, than attempted to be got rid of, an opportunity of the kind being one of not very usual occurrence. And it should be borne in mind, that, in this instance, the subdued light within the room itself has the effect of rendering the distant external view more sparkling and brilliant, so that the general impression would be one of cheerfulness and gaiety, rather than of gloominess; for whether a room be dull or not, depends not entirely upon the degree of light it receives, but also upon what is seen from it.

As there would be no occasion for a fireplace, nor for other furniture than a few chairs, and one or two small ornamental cabinets or stands, to support busts and similar articles, this room would appear larger than it else would do, since it would not be at all crowded up. It might also be made to serve the purpose of a library; not, indeed, of one for reading and studying in, but of a repository for books, which might be kept either in dwarf bookcases continued along the walls, about $4\frac{1}{2}$ ft. in height, or placed on shelves against the upper part of the walls. Of an evening, it could be lighted up, as well as the two adjoining rooms, and thereby give a third, where refreshments might be served to company. Should such a mode be preferred, nothing

would be easier than to vary this part of the plan, by taking into the anteroom that extremity or lobby of the conservatory into which the drawingroom opens, as is shown at g^* in the other house. Though this would considerably extend it, and give it the form of a gallery, I should not myself recommend its being done; because in that case the room would have an air of being intended for more than a mere thoroughfare, as it must necessarily be, unless the plan were altered still farther, so as to continue the the corridor quite to the drawingroom; but then, again, the corridor itself would be too dark at that end, while the room would not be at all larger than it now is, nor could it very well be kept as a study or small private room, from which visitors could be excluded, as it must necessarily serve as the communication between the drawingroom and conservatory. All things, therefore, considered, the first-mentioned arrangement deserves to have the preference given it, if only on account of its producing something rather unusual; not but that much might be made of such a room as g^* , especially were a recess got out of the adjoining corridor, so as to form a bay towards the court, containing a painted window. By this means both additional light and space might be obtained; which being done, it would then become desirable to have a chimney-piece facing the bay, at the back of that in the drawingroom. The next thing to be considered would be, how to obtain symmetry in the arrangement of the doors; and, in order to accomplish this, it would be requisite to make that from the corridor as little conspicuous as possible, by keeping it quite plain, and painting it of the same colour as the wall; and by having the next, or sham, door on the same side, filled with panels of mirror, to correspond with the glazed one leading into the conservatory: there would then be a bay between two of these doors on one side, and a chimney-piece between the two doors opening to the drawingroom; whereby there would be a view from that apartment, through the door, to the room reflected in the mirror; and through the other, to a stained window facing the conservatory door.

All this (and it has occurred to me but now, while reexamining the plan, in the course of describing it) would be an improvement upon the idea, and create considerably greater display; adding, in fact, another apartment to the house, although one that would hardly be available as a sitting-room. The chief objection likely to arise against it is on the score of economy. There is, at least, a choice of arrangements offered, so that the reader will assign the preference according to his own judgment or taste.

Although I have dwelt so much at length on this particular *episode* in the plan, one that many would be apt to consider very secondary, if not absolutely unimportant, I shall not be so

tedious in the remainder of the description ; but briefly remark, with respect to the drawingroom, that the opening into the bay is made narrower than the bay itself, both in order to make it correspond with the opposite folding doors, and to give greater effect ; besides which, instead of being at all objectionable, as intercepting light into the room, such contraction would prove rather desirable on that very account, there being three other windows. Indeed, the chief value of the bay is not so much for the sake of additional light as of increased space and variety of prospect, to say nothing of the improved appearance the external elevation derives from these lesser semicircular projections, in combination with the larger central one. Before the glazed door into the conservatory, there should be one similar to the others in the room ; for, if at no other time, it would require to be shut of an evening. Although, in continuation of the conservatory, into which it opens between antæ, the space *h* might be kept as a lobby to it, with merely an ornamental stand in the centre for plants and flowers, intermingled with vases of gold and silver fish, and birdcages : in this case, a few busts and bas-reliefs might enliven the walls, and would thus serve to mark the whole as being of a transition character between the dwelling-rooms and the conservatory. As may be inferred from what has already been said in speaking of *g**, it is intended that the window towards the court should be filled with stained glass, for the purpose both of screening the court itself, and of enriching the view from the drawingroom. The pavement should be either in compartments, or relieved by small black squares, set diagonally to the larger ones. In the way of furniture, nothing would be required except four chairs, or a couple of benches, which might be covered with leopard's skin, and mats of the same be laid at the doors. Thus fitted up, this kind of vestibule to the conservatory would prove a very agreeable spot to retire to with a book, it being calculated rather to invite to study than to disturb it. Should any one be of opinion that a small fountain in the centre, with lesser stands, similar to the one described, arranged round it, would be an improvement, I will not contradict him ; neither should I do so, were he to suggest that paintings *à la Pompeii* on the walls, and some polychromic embellishment on the ceiling and architectural mouldings, would be appropriately applied here. In fact, there would be ample opportunities for decoration, not only in this, but in other parts of the house : yet these are matters which it is better, perhaps, merely to hint at, as to be left for after consideration, and to be applied by degrees, than to startle by what may be censured as prodigality. Here it will suffice to show that they have not been overlooked, but that provision has been made for display and embellishment, even to far greater extent than is usual in a residence of this size ;

the house itself being by no means on an extravagant scale, either in regard to the number or size of the rooms; on the contrary, rather moderate in both respects.

The conservatory (*k*) will, perhaps, be considered somewhat extravagant, at least, in regard to height.* That strict economy has not here been complied with must be confessed; the object being to render it architecturally important. Were it much lower, it would not only be so trivial, that it would, perhaps, be better to make no pretensions to architectural design in this front, but it would expose to view the upper part of the building beyond it; while, to reduce the height only 3 or 4 feet, would be merely spoiling the design for the sake of a paltry saving in the sum total for the entire building. A deviation from the design, in regard to this feature, would necessarily call for other curtailments and retrenchments in the rest of the elevation.

A semicircular plan has been adopted for this part of the design, for one or two very sufficient reasons. In the first place, it is one very favourable for a conservatory; because the conservatory would catch the sun during a considerable part of the day; secondly, instead of at all encroaching upon, it gives greater space to, the court behind it; thirdly, it not only accords with the two bows at the ends of the houses, but serves as a screen between, preventing the windows of the one residence from being overlooked by those of the other. One objection likely to be made, and, therefore, to be anticipated, is, that the portions of the conservatory allotted to the respective residences are not exactly equal. This has arisen from the desire to keep a centre intercolumn; yet there would be no objection to having a pilaster there, and dividing off the building within exactly in the middle. Perhaps this would even be preferable to the mode shown in the plan, as there must be some sort of separation between the garden attached to one house, and that belonging to the other. But, then, such separation, it will be observed, even supposing it to be a mere low boundary wall, must, to a certain extent, interfere with architectural effect, by preventing the whole of this front being viewed from a central station. Undoubtedly, such would be the case; still, although this would operate as a drawback, the general effect, arising from uniformity of design, would manifest itself; besides which, as far as each house is concerned, its

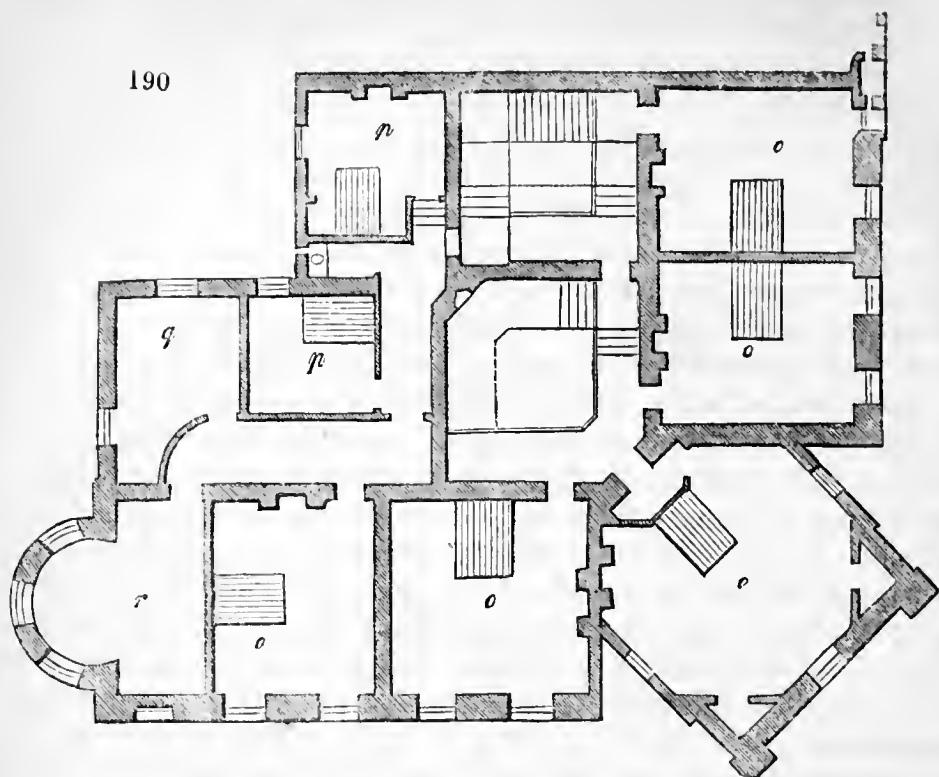
* The elevation being omitted, it becomes necessary to state that the windows are separated by twelve antæ or square pillars, the architrave of whose entablature is in continuation of the string course dividing the ground floor and upper floor. The height of the pillars, and, consequently, of the windows, would be 13 ft. As the roof would not be glazed, that would be made to slope towards the court behind, and the entablature be crowned by a blocking course. It is necessary, also, to explain that the windows of the offices in the basement would be above ground, the latter being supposed several feet lower than the carriage drive, which would have a gentle ascent up to the portico.

own portion of the conservatory would not only be ornamental from the grounds, but be beheld from the bay of the drawing-room.

So much explanation will, perhaps, be thought exceedingly prolix and tedious, especially after promising to be less minute in my remarks; however, if nothing more be alleged against my design than that it seems to require a great deal of interpretation, that is a kind of censure which I can readily submit to; neither is there much danger of my foible, in this respect, finding many imitators, it being by far a more common fault to omit even necessary, than to indulge in superfluous, explanation, and to leave architectural designs to speak for themselves, although it is not every one who clearly understands their language; nor, of those who do, is it every one who will be at the pains of studying all the points of the individual one submitted to his attention. But a truce to these observations, which may be deemed even worse than superfluous, and let me now endeavour to make amends for my previous lengthiness, by succinctness of description. The dining-room (*c*) need not detain us long. The sideboard recess is divided off by square pillars, as being more simple and unpretending than columns, and likewise serving to screen the servants' entrance more effectually than the latter would do, were they only of the same diameter. The door facing this recess is made to resemble a spacious folding one, and placed between antæ, corresponding with the pillars; while that within it opens to the back staircase (*i*), where a descent of a few steps leads down to the butler's pantry (*l*), and the next flight of stairs, in continuation, conducts down to the kitchen, and offices in the basement. Adjoining this staircase is a water-closet (*m*); and a similar "*Temple of the Naiads*," to make use of a very delicate poetical expression, may be reached from the small corridor *f*, and has, what is very desirable for all such temples, its own *pronaos*, or lobby.

At length, we may come to the upper floor, which, being appropriated entirely to sleeping-rooms, may be traversed very expeditiously. There are five principal bed-chambers (*fig. 190. o o o o o*), and two secondary ones (*p p*). The room *q* is left unappropriated, and might be used as a wardrobe for linen, or any other purposes that circumstances should dictate. Neither is any specific destination given to the bow-room (*r*); but it might be converted into a dressing-room, and a door opened to the adjoining bed-chamber. Other dressing-rooms are not provided for in the plan; but, in case fewer sleeping-apartments should be required, one or more of the bed-chambers could be used as such. For servants, there would, in addition to *p p*, be two other rooms above them; besides which, there might be a sleeping-room for men-servants in the basement. The chamber over

190



the vestibule is, like that, octagonal in the plan, by which means space is obtained for two closets; and, in order that the bed may be placed where, instead of coming near one of the windows, it faces that into the portico, and has another on each side of it, it is put against a partition screen, which leaves a little lobby between this chamber and the staircase, thereby rendering the room more private. The screen, however, should not rise quite up to the cornice of the room, because then the octagonal form of the ceiling would be destroyed; and, in order to keep up still more the appearance of an octagon, the sides of this screen ought not to be papered or coloured like the walls, but be hung with stuff of the same materials and pattern as the bed-hangings, and either the door be a jib one, to resemble the rest of the screen, or else have a drapery before it. Of course, the lobby space should not be left open to the room, but be covered in, and have light admitted through a glazed panel in its ceiling, or else through the upper panels of the door from the staircase. From two of the windows very little prospect could be obtained; yet that opposite the bed would afford a direct view through the portico, relieved by the capitals of the columns and antæ plainly defined against the sky.

Many other particulars might be gone into, but I will here bring my description to a conclusion; and the rather, because it might not be easy to enter into more particular remarks, without having recourse to illustrations.

ART. IV. *Candidus's Note-Book.*

Fasciculus XIV.

“ Sicut meus est mos,
Nescio quid meditans nugarum ; et totus in illis.”

I. “ No poet,” says Allan Cunningham in his *Life of Burlington*, “ will claim as much merit from translating Homer or Dante, though he should excel Cowper or Cary, as he would deem his due, had he written a *Faerie Queene* or a *Task* ; but your architectural copyist takes a much loftier view of himself ; he imagines he has achieved something truly grand when he has persuaded a prince or a peer to have a house, every pillar and architrave of which can be justified from antique example. This servile spirit disgraces the architecture of our country.” It may be so ; nay, it even is so ; and we find that, so far from being at all ashamed of it, architects plume themselves upon their servility, their automaton-like imitation of the same stale forms. Ought they, then, to abandon a safe and certain route, to renounce a style perfectly developed, and already firmly established, and take up with the forlorn hope of discovering something better ? There is no necessity for doing that either ; since it would afford sufficient novelty for a long time to come, were they but boldly to break through that system of slavish routine and *schlendrian* by which the style itself has been encumbered and debased, till every one has the orders by rote, and no more than by rote. Of the style itself we have attained just the *singeric*, thanks to the drilling and platooning of martinets, whether critics, connoisseurs, or professionalists : all of them admirably orthodox, and not a few of them most learnedly stupid. Of such there is no hope ; therefore, they must be left to go on copying, copying, copying, and to wonder at their own prodigious genius afterwards, until they shall be fairly driven from the field by the achievements of real talent and energy. In the mean while I would remark (and it appears there is, unfortunately, occasion for doing so,) that the architect who is *bien nourri* with the style of antiquity, or any other, ought to be able to infuse its spirit into his works, however widely he may deviate from every one of its examples. If his taste be thoroughly imbued from that source, there is not the least danger of his going astray, and losing himself in a trackless desert. He possesses chart and compass by which to steer his course aright. “ Ay ; but,” cry the timid and the indolent, “ why not keep to the good old turnpike road : that will answer our purpose well enough !” Truly, so it does ; you jog on comfortably, perchance doze and dream also. Yet it was not by travelling on a turnpike road that Columbus discovered a new world, or Vasco de Gama reached the Indies. If so must be, stick to your

pattern card of the orders ; only be a little more modest, instead of assuming as much consequence, as if you were each individually the inventors of them all. “Le charlatanisme,” says De Vigny, “est insolent et corrupteur ; et il a donné de tels exemples dans notre siècle, et a mené si grand bruit de tambour et de la baguette sur la place publique qu’il s’est glissé dans toute profession. Le nombre est incalculable des grenouilles qui crèvent.”

II. As productions of architecture, many of the lately erected churches are most contemptible. To liken them either to a barn or a meeting-house, would be absolute flattery, because these have at least no pretension, nor any trumpery about them, while some of the others exhibit beggarly meanness in company with the most vulgar tawdriness. In proof of this (and, without some kind of proof, the remark would amount to nothing), I may refer to the brick bandbox that has lately been stuck up in West Harding Street, Gough Square, and St. James’s, Holloway. Of each of them the interior is merely a large white-washed room, fitted up with boxes and benches, in which the *ne plus ultra* of ingenious economy appears to have been studied. This economy might be excusable, if not laudable, were not the whole rendered offensively ridiculous, in the one case, by three Harlequin-jacket windows of flaring coloured glass, over the altar ; and in the other by two staring hideous columns, whose shafts are exceedingly badly painted in imitation of green marble, and surmounted by coarse Corinthian capitals, with a strip of moulding between them and the ceiling. By way of keeping up some sort of unity with these flashy green columns, the window between them, which is that over the altar, is shaded by a smart green Venetian blind ! Altogether, the effect is shockingly indecorous ; the taste here displayed being that of a vulgar flaunting gin palace. If the church commissioners are blind to such abominable incongruities, to such mockery of all decorum and solemnity, it is time some remedy for their insufficiency should be supplied ; for, as these matters are managed at present, all the scandalous humbug of competition might as well be spared : the concocting of a design for a church be as well left to the parish bricklayer and churchwardens, and the tasty part be consigned to — my grandmother.

III. If the gin shop style seems to be invading our churches, that of Vauxhall and the tea-garden appears to be besieging our cemeteries. In that of Highgate, we behold the tea-garden taste exhibited *ad nauseam*. The entrance is both within and without a very choice morceau of tea-garden Gothic ; prodigiously smart, exceedingly nice ; neither grand nor gloomy, neither solemn nor sulky ; neither dowdy nor dismal ; but, on the contrary, as smirking, as smart, and as smiling, as a dapper widow in her

weeds of genteel disconsolation. As type of such disconsolate widowhood, the design is appropriate enough, and highly creditable to the ingenuity of Mr. S. Geary. It is to be feared, however, that few persons will detect this covert propriety; and they will therefore be apt to fancy that this structure is much too toyish and *baby-house-ish*; not to say more flarishly meretricious than is exactly becoming. The chapel is a very snug little boudoir-looking room, remarkable for nothing so much as for the florid gaiety of its pretty little rainbow-tinted windows. Of the mockery of woe it presents nothing, and, so far, is innocent enough: it is melancholy masked like mirth; it is grief *couleur de rose*. As to the style of the building altogether, it may be called a *grimacier* Gothic; a hotch-potch medley of samples and scraps, jumbled together without any discrimination, and without evincing either knowledge or feeling for architectural combination. It is a vulgar, pert, tawdry compound of frippery and flutter; as ill imagined as anything very well can be for an accompaniment to a cemetery. However, as an advertisement or good-sized placard of the *spec.*, it may, perhaps, answer the purpose infinitely better than an infinitely better thing would do; and that, it may be presumed, is, after all, the chief consideration in this age of joint-stock undertakings and undertakers.

IV. Perhaps the following hints might be studied with advantage by those who, lured by newspaper advertisements, holding forth the chance of a magnificent premium of twenty guineas, and allowing nearly half that number of days for making drawings, suffer themselves to be entrapped into competitions, decided by the "collective wisdom," whose knowledge of architecture just enables them to distinguish a door from a window. First and foremost, avoid anything approaching to originality as you would the plague; for, to seek it, is only plaguing yourself to no purpose. Even should it present itself uncalled for, dismiss it as impertinence, as absolute ruination. Recollect that the more commonplace your ideas are, the better are they adapted to the taste of commonplace people. Wherefore should you be so foolish as to cast pearls before swine? No; it is commonplace which is certain to carry the day. Besides, it is hardly necessary to remark, that, while it saves both yourself and the "collective wisdom" above alluded to a great deal of trouble, no one can say that it is odd or strange-looking. A portico, if the style is to be classical, is a *sine quâ non*; therefore, turn at once to Stuart, and you will meet with one ready made.² Recollect, however, that, although it should be classical, on no account ought it to be paganish; therefore, to escape the suspicion of being a heathen, take care to have some neat sash-windows in it, and a door tastily painted. By tastily, I mean, one either painted

of a bright cabbage-green, or else of a cane-colour. If you find that the funds will not afford both classical columns and dressings to the windows, *tant mieux*: you have only to omit the latter, and your design becomes all the more simple and chaste. I will not insult your understanding by telling you that simplicity is every thing, and that simplicity itself consists in nothing; that is, in putting nothing where æsthetic feeling requires something: in short, simplicity is what every simpleton comprehends. But why do you stumble at the word *æsthetic*? it is a very honest and very serviceable one; so, if you do not understand, look into Britton's *Dictionary* for it, where you will be sure to find it, provided he has not omitted it, as not sufficiently *Christian* for him to countenance it. Should you find, moreover, that the expense of your capitals will swallow up your cornice, and compel you to substitute a mere shelf instead of it, *tant mieux* again; you only show your affection for simplicity, and, instead of encumbering the top of your building by mouldings and carvings, render it light and airy. Stick to your capitals, for, at all events, they are capital things, and may help yourself into a capital job. No matter what critics may say; and remember that it is not critics who pay you: on the contrary, they write only in the hope of being paid themselves. You are orthodox and classical: your columns prove it in the teeth of all the critics in the world. Bear in mind, that you have to hit the taste of the "collective wisdom," who do not care to be bothered with new ideas. Be at once classical and cockney, and you accomplish every thing.

V. There is one novel circumstance of decoration in the interior of the new synagogue, Great St. Helens, just completed by Davies, that pleases me much; namely, that which is bestowed upon the windows. Even where they have external dressings, the windows of churches are allowed to remain mere naked apertures within the building; but, in this instance, they have been rendered ornamental features, and made to conduce very materially towards the general architectural finish of the interior, by the addition of console cornices and other dressings. I wish, however, that, having innovated thus far, the architect had gone a little farther, and just relieved some of the mouldings by gilding, as has been done in the entablature of the ark; though not, perhaps, quite to the same extent. In my opinion, too, it would have been no small improvement, had the framing, in which the squares of glass are set, been gilded also. It is curious enough, however, that, whatever degree of decoration be affected in any other parts of a church, the windows are utterly neglected, and suffered to remain eyesores and blemishes in the design. Neither St. Paul's, nor the chapel of Greenwich Hospital, derives any beauty from its windows. Of late years, the mode of glazing adopted has manifested some little improvement in regard to material and

workmanship, but none as to design; except it be that a bordering of stained glass is occasionally added. Nay, it would seem that, in some instances, beggarliness of appearance has been considered to be *comme il faut*; not a defect, but a propriety; as witness the miserable little panes, set in lead, in the windows of the front of St. Philip's Chapel, Regent Street, although the windows themselves are not much longer than one of the sheets of plate glass that we behold in many shops. In the Gothic style (I do not mean the Church Commissioners' Gothic), the windows were frequently the most magnificent features of an interior; nowadays, they are generally made to exhibit the most *recherché* paltriness. An idea here jumps into my head, which I allow to jump out of it into my paper. Why not fill up the whole of the apertures, internally, by semitransparent blinds, permanently fixed, by being strained on framing? These might be painted merely decoratively; that is, with a pattern designed analogously to the style of architecture, as far as any style is intended. The greater sobriety and uniformity, or variety and richness, of colouring would, of course, depend upon circumstances. Perhaps I shall better explain my meaning by referring at once to the painted arabesque windows in the ark of the synagogue, which I began by speaking of: for instance, nearly the same effect might have been continued throughout, without going to the expense of painted glass for all the windows, by blinds, fixed as has been suggested. By this means, too, the raw and cold light, which now prevails in our churches, would be mitigated, and acquire some warmth of tone. Or, should it be found that the light was too much obscured, and that the congregation were thereby prevented from criticising each other's dresses, and studying the newest fashions of the preceding week, additional light and ventilation might be obtained from above, either by lanterns or clerestory windows, as the case should require.

VI. Another thing greatly in favour of the synagogue above mentioned, and wherein it might serve as a model to Christian places of worship, is, that it is not *penned off à la* Smithfield, and blocked up with pews. Architecturally speaking, pews are utter abominations: how far they are in accordance with the spirit of Christian humility and equality, I leave to be guessed. Many people, very good-meaning and respectable, perhaps, consider a pew as a sort of Sunday opera box, where they may exhibit themselves in all their importance, to the great edification of vulgar sinners. On the subject of pews, I agree with *Pewgin*.

VII. In general, very little invention is displayed in composition, and still less in detail. There may be, in some instances, a good deal of attention and care bestowed upon it; but, then, it is all borrowed, and without any manifestation of originality.

However good it may be in itself, it is merely a transcript of a leaf out of the old copy-book that we have every one of us thoroughly by rote. Allow me here to relate an anecdote, which has, at least, the merit of being somewhat less musty than the generality of the things so termed. There was once a Turkish grandee, called either Boug Houm, or Houm Boug; one who, in other respects, might have passed for a sensible man, not only in Turkey, but in any part of Christendom, yet who was smitten with an incurable mania for passing as a poet also. Yet, though he had succeeded, to his utmost satisfaction, in composing one couplet, he found that, let him rack his brains as much as he would, he could never accomplish a second. This was rather disheartening; and any one else would have renounced verse-making for ever; concluding that, as *poeta non fit*, he himself was not fitted by nature for poetry. The worthy Houm Boug, however, was not so to be discouraged. He had determined, *coûte qu'il coûte*, to show himself to the world in print, and in poetry, and he was as good as his word. On its appearance, Houm Boug's book threw all the bibliomaniacs of Constantinople into raptures; it was extolled as the very *ne plus ultra* of typography and vellum. The public and the critics were not quite so satisfied as to its excellence, when they discovered, what its first-mentioned admirers either had not observed, or did not care about, namely, that it consisted entirely of Houm Boug's single lucky couplet, printed in types of all sizes, and of every imaginable variety, and each variety repeated in gold, azure, red, and different colours, besides being eked out with a profusion of flourishes and other parenthetical devices. Whether this discovery tended at all to diminish our friend Houm Boug's poetical reputation, I will not, out of tender regard to my own character for veracity, affirm; for I should be very loth to mislead the reader upon so delicate and exceedingly dubious a point, more particularly when others can decide it for themselves, just as well as I can pretend to do for them. Much less will I pay the reader the very ill compliment of supposing that he cannot find out the application of the story without my assistance. Neither will I say that architecture resembles Houm Boug; though I must own that there are one or two Houm Bongs in the profession.

VIII. Unlike Lord Chesterfield, whose good-breeding, *cum pace tanti*, was of a rather nervous and hypochondriacal kind, I entertain no fidgety horror of proverbs, and even vulgar sayings, provided they are introduced only like angels' visits, and are not vulgarly applied. I shall, therefore, without scruple, take one for my text, which tells us that, "When the devil can't swim, he lays the fault on the water." Herein architects, I am sorry to say, are but too apt to follow the devil's example. Afford them

but opportunities, give them but ample scope for their ideas, and, if you choose to believe them, they will astonish you by the sublime magnificence of their imagination. They who are unable to put together two ideas of their own in an ordinary building, nevertheless give you to understand that they should be able to produce something superlatively fine, were they but allowed to exert their powers on a gigantic scale. Happy, enviable mortals ! you can't swim, but still your consciences ever whisper to you that the fault lies entirely with the water. Or, if the blame cannot exactly be laid on the subject, it is thrown upon the style that is demanded for it ; else is there some other circumstance that hinders you from displaying your *maestria*. But, let me for once whisper to you, or, if whispering won't do, thunder forth to you, that talent is never at a loss for opportunities ; for it either sees them, or makes them, where none exist to ordinary men. In like manner, it is able to infuse a charm into the driest, the dreariest, the dullest, and the dowdiest style. Treated with mastery and feeling, the worst style becomes preferable to the best, when the latter is divested of all its spirit, as is the case with a great deal of our modern Greek architecture, than which nothing can be more mawkish or insipid. The other day, I beheld, for the first time, that example of *soi-disant* Grecian, St. Luke's, Norwood. It is the consummation of all that is beggarly and miserable ; and, for my part, I think that, if the architect had any spirit, he would have hanged himself as soon as it was completed.

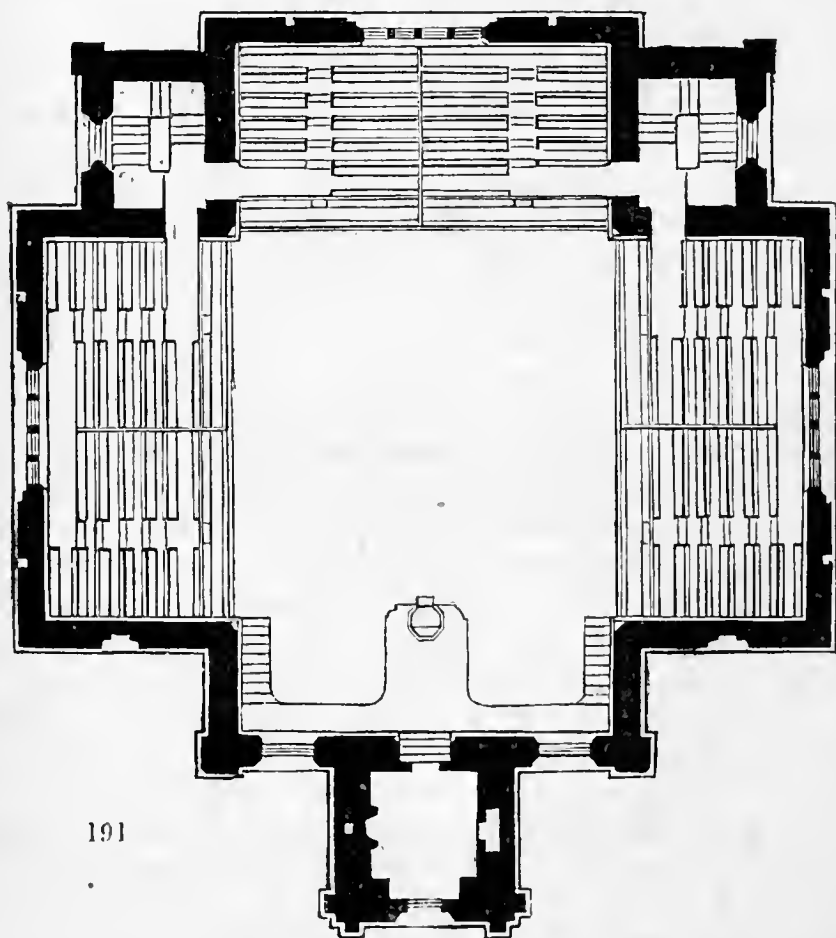
We have ample proof, then, that the most excellent style may be rendered absolutely intolerable. Should any one, on the other hand, ask *how* a poor and feeble one may be rendered expressive, attractive, and even graceful, my answer must be somewhat akin to the notable rule given to children for catching birds by putting salt on their tails ; for, if a man cannot find out this *how* by himself, he may be assured that all the philosophers in this philosophical world cannot point it out to him, or find it out for him. Geniality of mind, and *con amore* application, must direct him to it. In all art, and I am still willing to include architecture among the number of the fine arts, although I begin to entertain very serious misgivings as to its being such, when I look around me, and consider with what kind of feeling, and in what kind of manner, it is pursued ; in all art, the first step is to become thoroughly acquainted with its rules ; the next is to dismiss them entirely, as superfluous conventionalities, of no more use to the accomplished artist than cork or bladders to the experienced swimmer. Nevertheless, I would not recommend every one to adopt this advice too literally, or even to follow it at all, unless he be first morally assured that he is well fitted to enter upon that second and higher grade. On the contrary, should his mental constitution happen to be a leaden one, let

him, by all means, stick to his cork and bladders as long as he lives; and let him trust that his own imbecility will find its full account in the rival ignorance of the public in matters of architecture. Of the extreme apathy of that same public, the *Architectural Magazine* itself furnishes a convincing proof, as this Number brings it to a conclusion.

Nothing, therefore, now remains for Candidus, but to make his bow and his exit; for, though he may probably appear in some other avatar, the curtain drops upon him in his present character. To some this may be matter of exultation, rather than regret; and, indeed, before so very matter-of-fact an audience as he suspects his to have been in general, to have obtained the approbation of a few is a sufficient distinction. To such, therefore, he bids farewell, in the words—

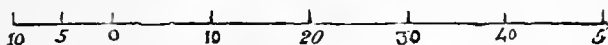
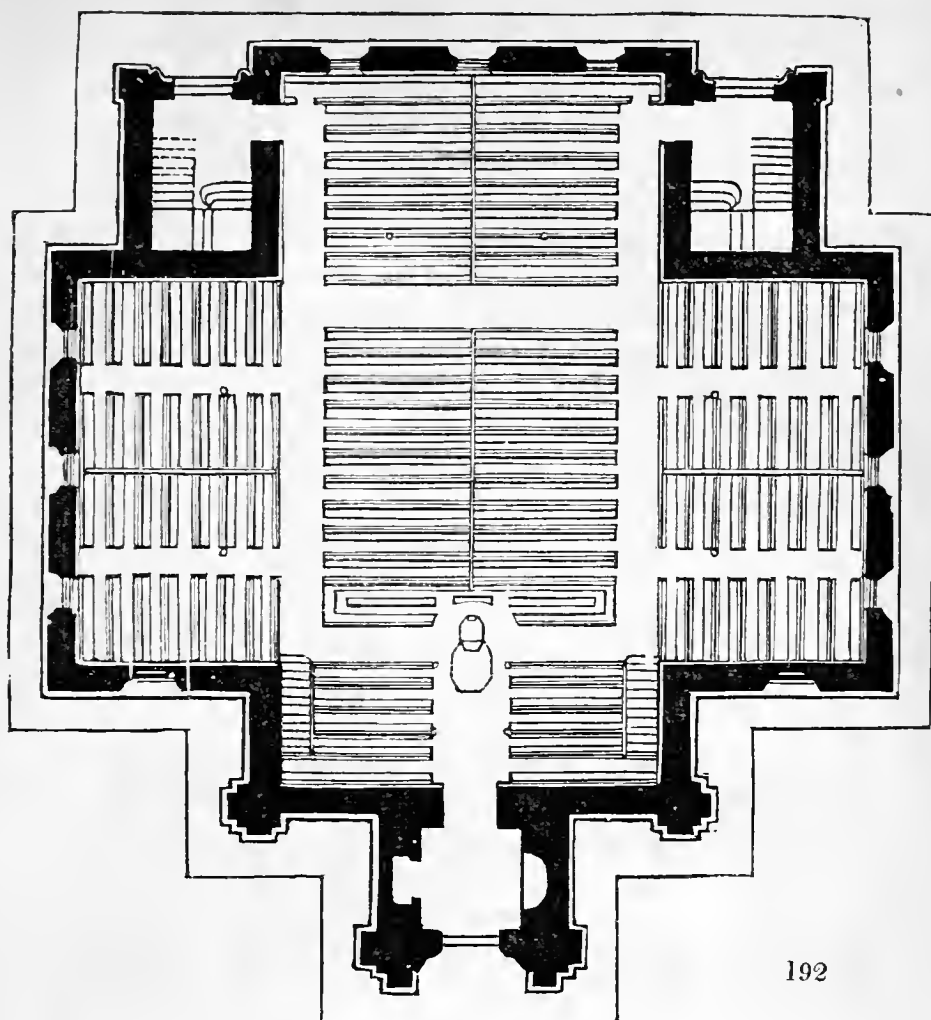
VALETE ET PLAUDITE.

ART. V. *A short Notice of the Kirk of Alyth, recently erected, in Perthshire.* By A SUBSCRIBER.



191

You have favoured your subscribers with the designs of several churches built in England; and I enclose a sketch of the south

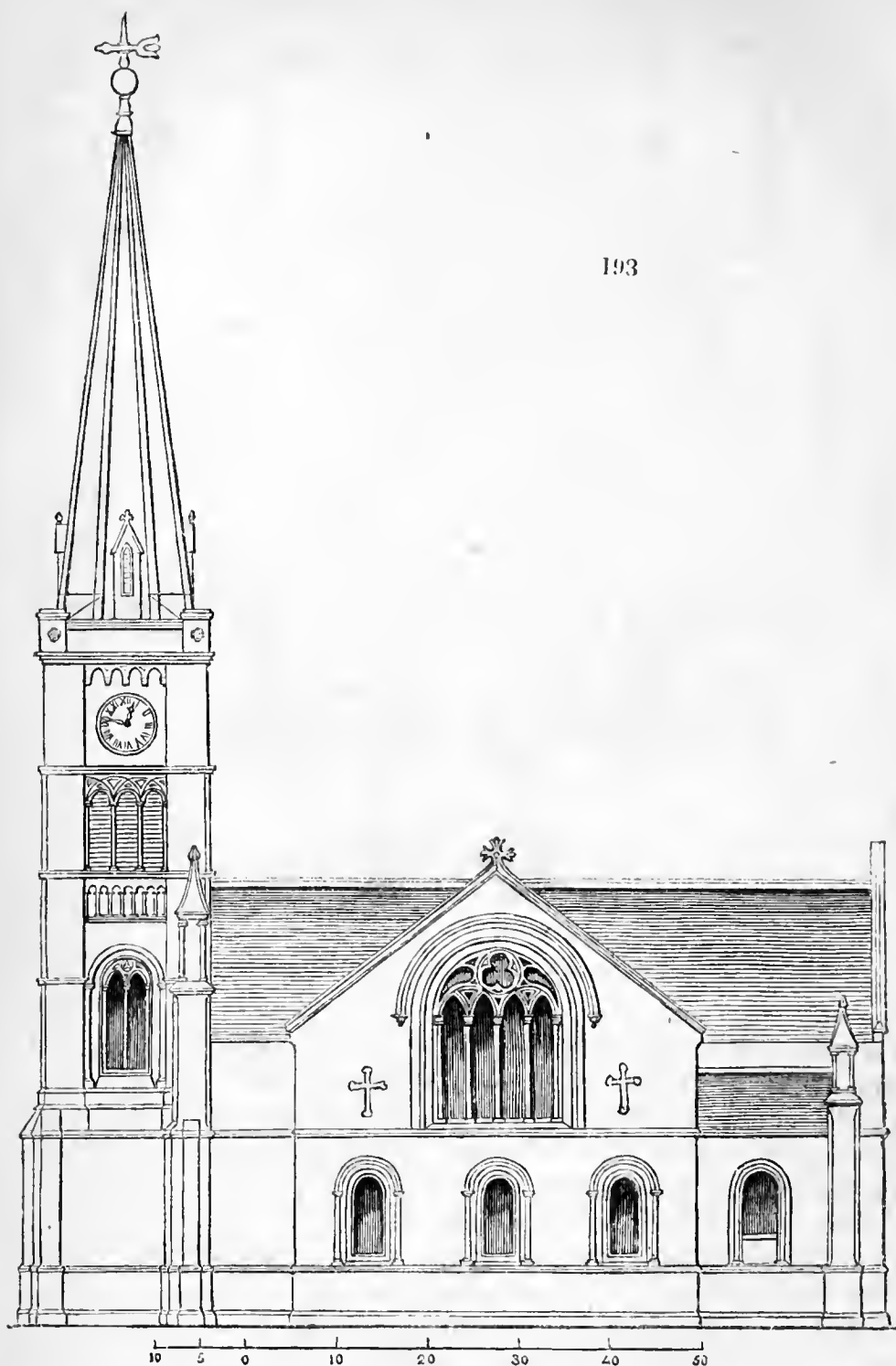


elevation (*fig.* 193.), with the gallery and ground plans (*figs.* 191. and 192.), of a new kirk, now building for the parish of Alyth, in the county of Perth. The parish is situated on the south side of the valley of Strathmore, twenty miles east from Perth, on the road to Aberdeen.

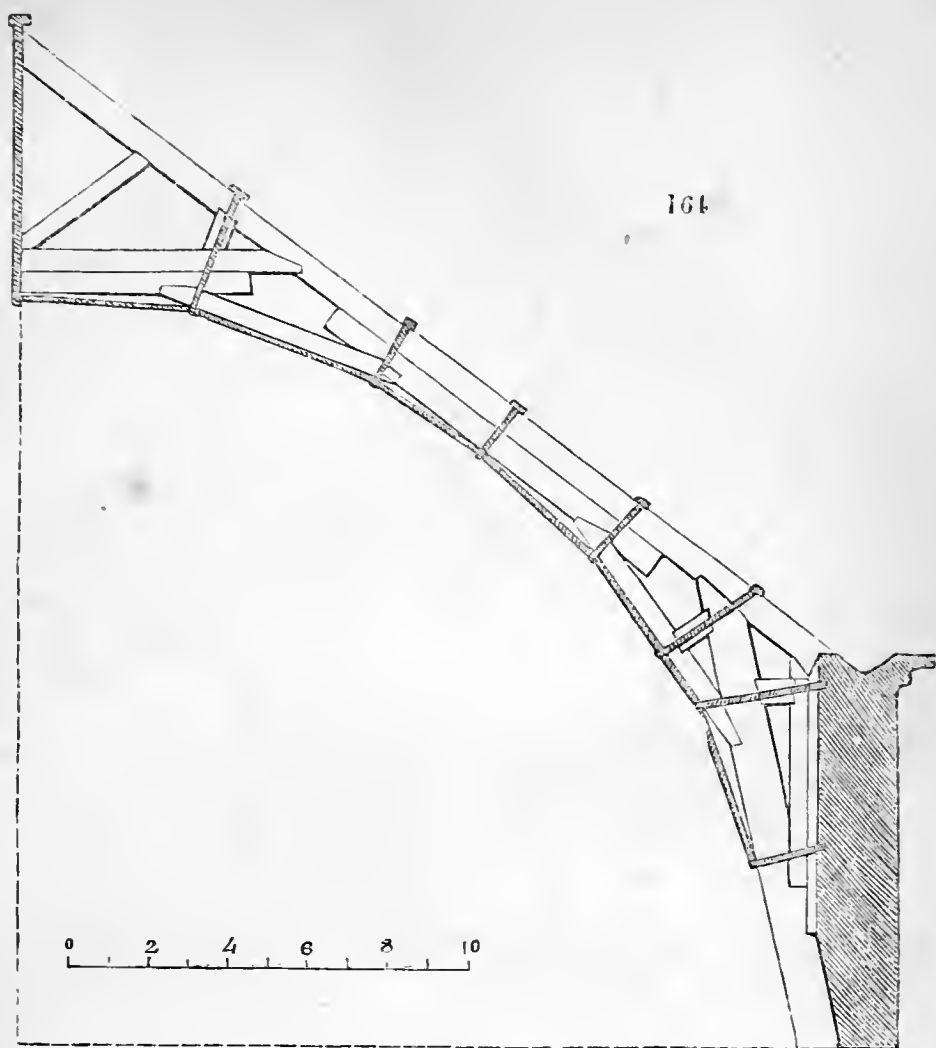
The kirk is built of a reddish grey stone, the produce of the country: it is all hewn in regular courses, and dabbed in the face, which gives it a very neat appearance. The building is situated on a gently rising ground, and is to have a wall of the same kind of masonry entirely round it, so as to make it appear to stand on a terrace.

The interior finishing corresponds with the exterior appearance; and the roof, inside, is to be semicircular, and groined, &c. The arch begins to rise 7 ft. below the top of the side walls, as you will see by a sketch (*fig.* 194.) of half of one of the main trusses for the roof; a considerable part of the height of the side walls is thus saved.

193



There are seven of these trusses; one above the pulpit, and one above the front of each of the three galleries; and the galleries have another, between the front truss and the gable walls. There are also two diagonal trusses across the body of the kirk. The trusses are well bolted and strapped with iron, as may be seen in the sketch (*fig. 194.*). There is no tie-beam; but the



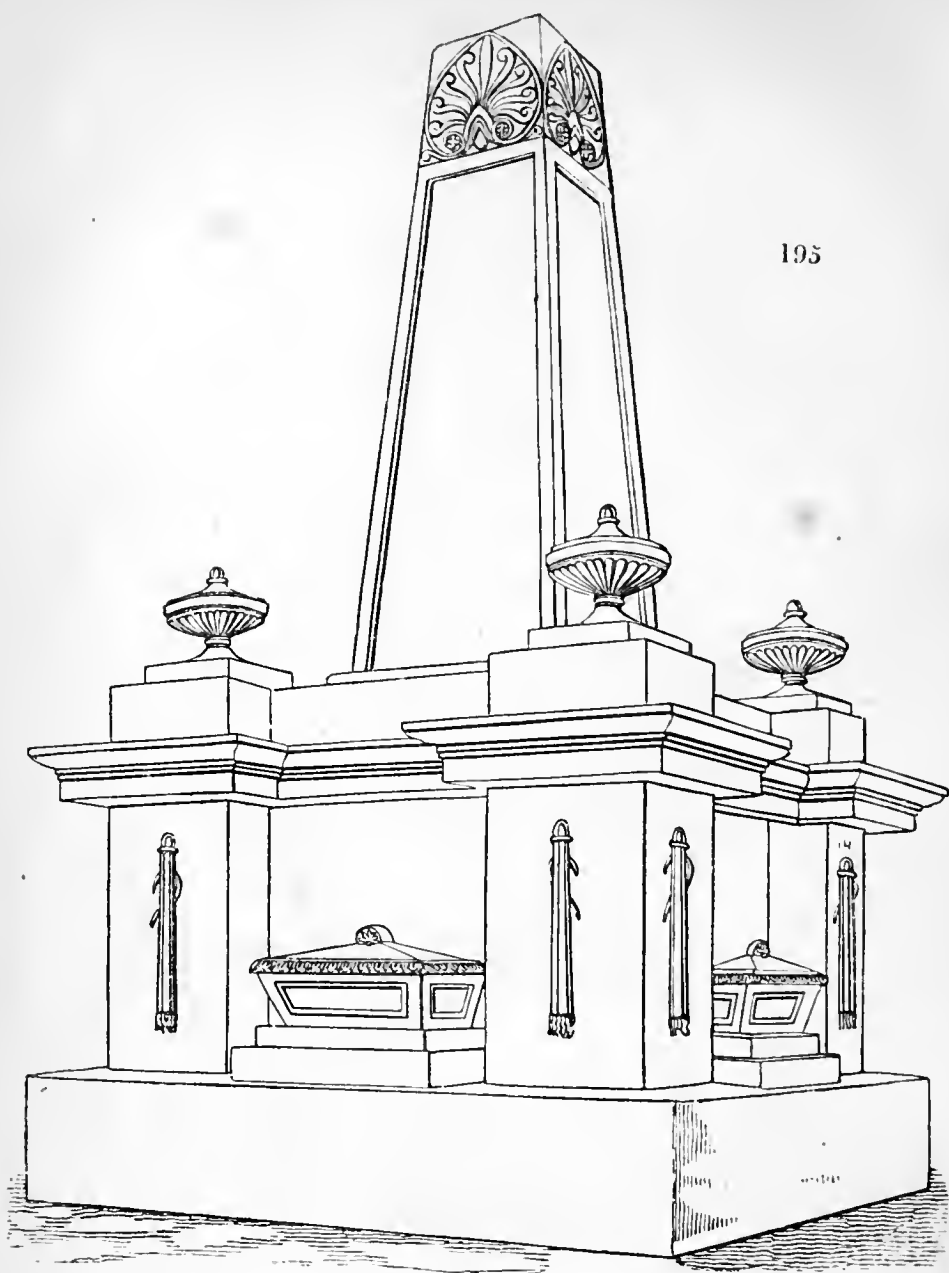
feet of the trusses are kept from spreading by being opposite to the outside walls, as seen in the plans (*figs.* 191. and 192.).

The kirk was planned by, and is executing under the superintendence of, Thomas Hamilton, Esq., architect in Edinburgh. It is to hold about 1300 persons, and is expected to cost about 7000*l.*, or two thirds of one year's rent of the parish.

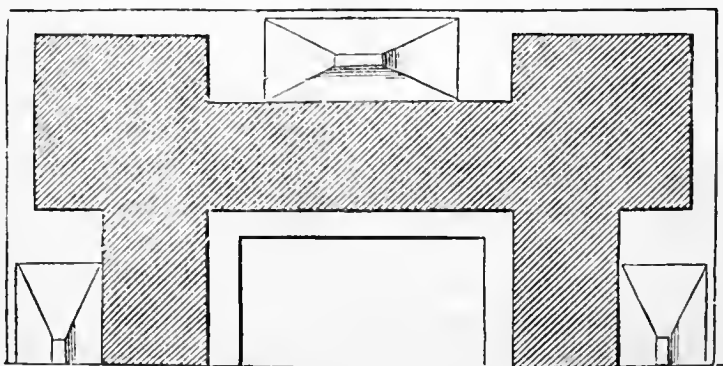
Alyth, June 22. 1838.

ART. VI. *Two Designs for Monuments.* By HERMAN HERMAN, Architect, Munich.

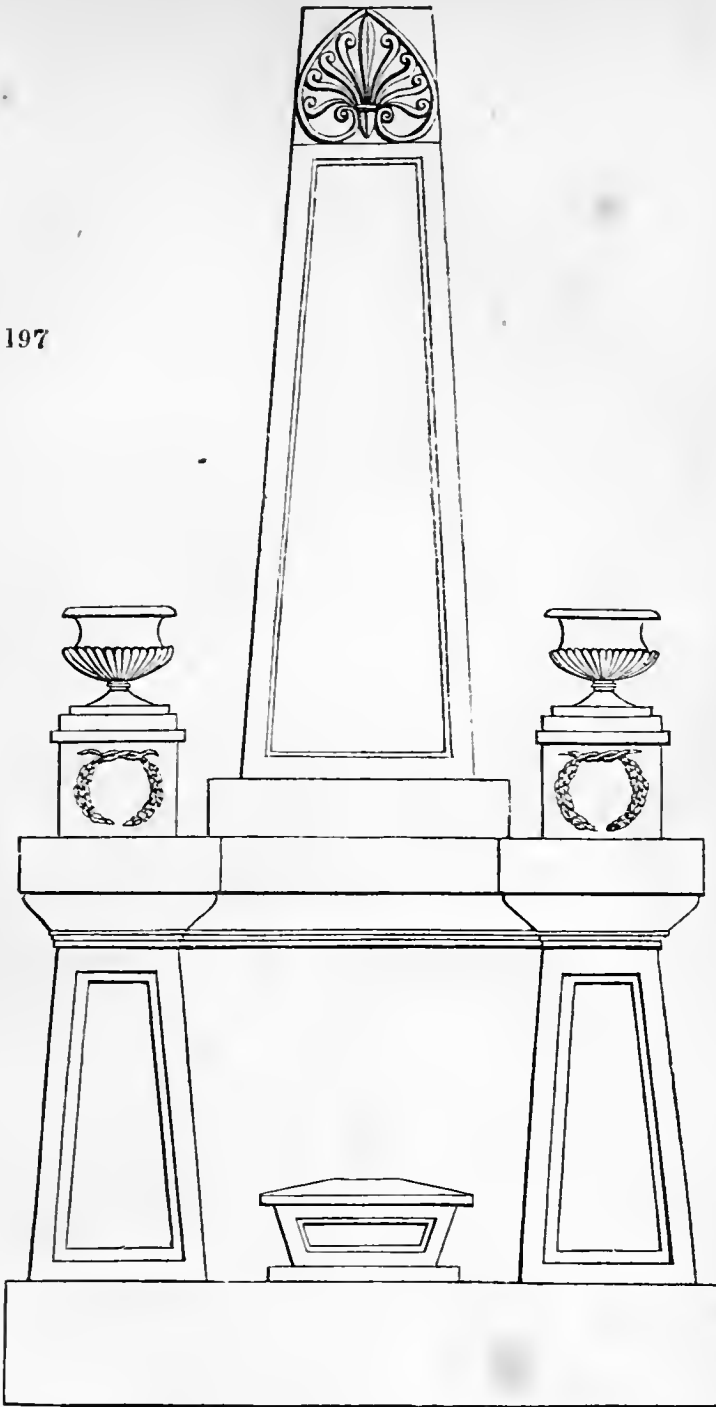
THESE designs were sent to us by M. Herman, about a year after we commenced this Magazine, but without any letterpress explanation. The two elevations (*figs.* 195. and 197.) exhibit the



same general character, and appear adapted to the same ground plan (*fig. 196.*).



197



Munich, Feb. 1835.

ART. VII. *Hints on Construction: addressed to Architectural Students.*
By GEORGE GODWIN, Jun., F.S.A. and M.I.A.

NO. 7. BRICKS AND BRICKWORK. (*Continued from p. 519., and concluded.*)

THE unexpected termination of the *Architectural Magazine* forces us hastily to conclude our projected memoranda, even at
VOL. V. — No. 58.

P P

the commencement (for no further have they yet advanced), and makes this the last, although not the end, of the papers. To state that we regret greatly the discontinuance of the Magazine, from motives very far apart, of course, from this last unimportant circumstance, does not sufficiently express our feelings on the matter; but in this place it might be deemed impertinent if much more were said. Architecture, our elevating but, up to this time, little regarded profession, can ill afford (promising as are her prospects) to lose *any* friend; still less such a one as we think this Magazine has been, and might still have been, to her; and therefore we repeat, we view with sorrow the announced intention, and think we may be excused for saying so. With this brief expression of feeling we resume the subject.

In the fifth paper it is recommended that the bricklayer's specification should contain directions to grout the work, at certain intervals, with hot lime and water. It should have been, with hot lime, *sand*, and water; in other words, with fresh mortar diluted; but the word sand was omitted by mistake. Lime is of itself, as we all know, a frangible and friable material, its office being merely to cement together other and more solid substances. To fill the insterstices in a brick wall with lime, would, therefore, add but little to its strength; whereas if they are filled with sand, solidified by lime, the whole will be rendered more dense and endurable, sand being in reality flint. This circumstance, it will be seen, is important, with regard to the composition of mortar, and would have been duly considered under that head.

In the walls forming the basement story of a building, the use of *timber bond* is less advisable than in the upper stories, insomuch as it is there more exposed to the operations of damp than elsewhere, and is therefore liable to decay. Generally speaking, it is not required in the walls of the basement; but when the foundation is bad, and bond seems to be especially needed, two courses of bricks throughout the whole extent of the building, carried up in Roman cement or asphalte instead of mortar, will be found an efficient substitute. This measure has the effect, too, of retarding the ascent of dampness in the walls, for it is found that damp is transmitted through the mortar more rapidly than through the bricks, whereas cement is impervious to water and effectually stops it. In some situations it is necessary to use cement wholly for the walls of the basement; indeed it might be employed with great advantage much more often than it is, but for the extra cost. The additional expense of brickwork in cement is about 5*l.* per rod of 272 ft. reduced, that is, 272 ft. superficial $1\frac{1}{2}$ brick thick. The cost of a rod of stock brickwork in mortar, at this time, in the neighbourhood of London, may be calculated at 12*l.*; namely:—

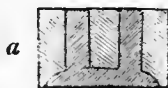
	£	s.	d.
4000 stock bricks, delivered at 36s. per 1000	-	-	- 7 4 0
Labour, mortar, and scaffolding	-	-	- 3 9 0
Profit, say 10 per cent on bricks, and 20 per cent on labour	-	-	- 1 8 0
	<hr/> £12 1 0 <hr/>		

and in cement at 17l. 9s.; namely:—

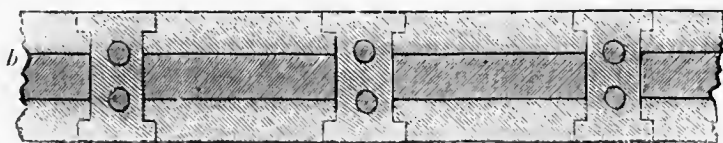
	£	s.	d.
4000 bricks, delivered, at 36s. per 1000	-	-	- 7 4 0
Labour, sand, and cement, with use of scaffolding	-	-	- 7 19 0
Profit, as before	-	-	- 2 6 0
	<hr/> £17 9 0 <hr/>		

Many attempts have been made, at different times, both to improve the shape and composition of bricks by the use of machinery, and to bring into general practice entirely new systems of brickwork. Not long ago the establishment of a company was agitated, for the purpose of introducing the use of “compressed bricks,” which, it was said, were each to be as a piece of granite, impenetrable by water, indestructible by time. It does not appear, however, that the project found favour in the eyes of the world, and we are not in a position at this moment to offer any opinion on the advantages or otherwise of the proposed improvement.

One of the most comprehensive new systems with which we are acquainted, is that invented by Mr. Caleb Hitch, brick-maker, of Ware, in Hertfordshire; and as we have had much of it executed under our own direction, and are led to believe that ultimately it will be very extensively used in the metropolis, as indeed it is already in many parts of the country, we shall briefly mention some of its peculiarities. It is known as the “Patent Rebated Brickwork,” and its leading principle will be readily understood on examining the annexed engraving, *fig. 198. b*, which represents part of one course of 9-inch work, and from which it will be seen that the headers and stretchers are rebated together, and form two external faces of brickwork enclosing a



198



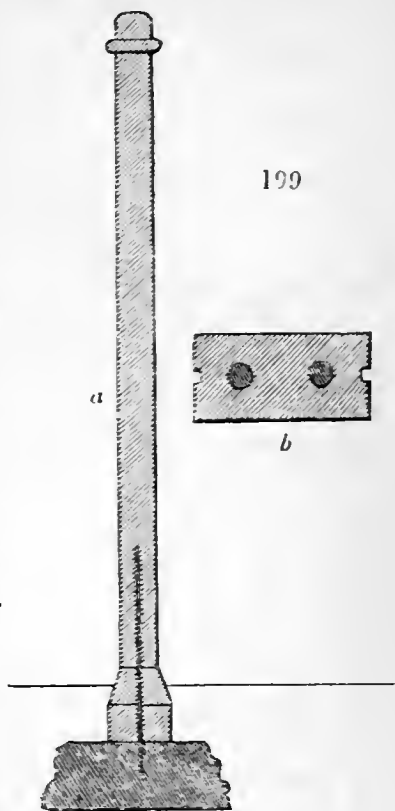
hollow space, or series of hollow spaces. Each of the headers has two dowel-holes through it, in the direction of its height, and is hollowed out on the under side as shown at *a* (which

is a longitudinal section of a 9-inch header): so that these spaces communicate with one another, by means of the dowel-holes, throughout the whole extent of the wall. Now, into these chambers, as each course is laid, a concrete, properly compounded of ballast and Dorking lime, is introduced; and the whole, when finished, is thus rendered a solid and well-combined mass. We all know the length of time, during which walls constructed on this principle in Greece, in Rome, and, more lately, in England, by the Normans, have endured, and there is much reason therefore that we should place dependence on it; apart, however, from this circumstance, we are able to state that on lately attempting to cut into walls erected with the rebated bricks ten years ago, they were found to be almost impenetrable by the workmen.

The appearance presented by walls built in this manner is uniform and bold (each brick being 5 in. high, and proportionally long): very little mortar is required for laying the bricks; so that, if affected by frost, the work may be repaired at small cost. Again, too, the importance of giving to the bricks the perfect shape of the mould entails the necessity of previously well kneading the clay, and, when moulded, the form of the brick allows full effect to the fire while burning; so that, in composition also, these are generally superior to common bricks: and yet, notwithstanding all these supposed advantages, brickwork can be executed in this manner 20 per cent cheaper than by the ordinary method. A variety of other bricks, besides those we have mentioned, are used in this system of construction; such as bat-headers, closers, reveal-headers, and angle-headers; and this slight complexity seems to be the chief objection to its general use, as common workmen are unable to execute it without some little previous instruction on the subject. In thick walls, for the interior of which the patentee uses what he calls a "clenched core-brick," to tie the whole together, and prevent the walls from splitting, almost any degree of strength may be attained; and here, inasmuch as a greater proportion of concrete is employed, a much larger saving than that mentioned above may be effected; probably as much, in some cases, as 40 per cent.

For arches, Mr. Hitch has made wedge-shaped bricks, of various radius; by means of which the large mortar joint, occurring when common bricks are employed for this purpose, is avoided; and ordinary vaults may thus be formed of 5-inch "arch bricks," having over them a thin layer of concrete, for about 5s. per yard superficial. Several small bridges have been successfully built with them. For garden walls, bricks are especially made with merely two dowel-holes in them; so that iron rods or oaken stakes may be passed through, and thus string the bricks together, the interstices being filled up with concrete. *Fig. 199.*

b shows the plan of one of these bricks ; and *a* is a section of garden walling, constructed with them, under our direction, in several places. A footing of concrete, about 12 in. in thickness, is first thrown in. Upon this is laid one course of 9-inch work, and one course of splayed bricks, made for the purpose, from which commences the 6-inch walling of doweled bricks, terminating with a bead brick and coping of the same material, set in cement. At certain intervals, angular piers are formed, to strengthen the wall ; and iron rods, as before mentioned, are introduced in various places. One of the latter is shown in the engraving, passing through the bottom courses into the concrete. The cost of a wall thus constructed, with 6-inch bricks, including the coping and piers, but exclusive of the concrete footing, is about 5s. per yard (being little more than the price of wooden fencing, which constantly requires repairs, and is, therefore, a continual source of expense) ; and a similar wall may be built with 4-inch bricks for 4s. per yard. In order to train trees against these walls, without breaking the face of them with nails, whereby harbour is afforded to insects, a short strip of zinc is worked in with the bricks, edgewise, every two courses in height, at certain intervals, having a small hole in the projecting end through these holes wires are passed, to which the branches of the trees may be tied. For horticultural purposes, the patentee has occasionally glazed the face of his bricks : this is the case with a wall in the garden at Hampton Court Palace, built by him several years ago ; but of the practical effects of this course we are not prepared to speak.



ART. VIII. *On the Philosophy of Architecture.* From the German of Weinbrenner. Translated for the "Architectura Magazine" by M. L.

(Continued from p. 408.)

CHAP. II.

ON THE FORM OF (GERMAN) VESSELS FOR CONTAINING LIQUIDS.

FIGS. 200, 201, 202. are the forms of three common water, beer, or wine glasses, the size of which is fixed, according to the quantity and quality, to hold about as much as : man can



swallow at a draught. These vessels may be made of leather, turned wood, metal, stone, glass, or burnt earth; because the shape is but slightly opposed to the nature of wood, and does not affect the other materials in any way whatever. In point of durability, the circular form (*Grundform*) of the material confines the pressure of the liquid within, in the manner of a hoop; and, at the same time, its curved exterior is opposed to the effect of any external injury, which properties a four-cornered vessel would not possess.

If we suppose these vessels not turned out of a single piece of wood, but the bottom set in, in the manner of a cask, the form would then be unpleasing, on account of its inconsiderable size; and we should, perhaps, prefer them made four-cornered, and larger, somewhat like *figs.* 246, 247. and 252.

With respect to the shape of the sides (*Höhenform*), that of *fig.* 201. is more convenient to hold and to drink out of than that of *fig.* 202.; because the latter, by its inverted conical shape, does not convey the liquid so readily to the mouth as the other, but tends rather to retain it within itself; which property, in small vessels for spirituous liquors, as well as in some larger ones for containing fluids, such as in beer mugs and water pails (*figs.* 248. and 246.), is of great advantage, as the fluid does not rush towards the face in drinking, and the spirit can not so easily escape as out of the other. Besides, *fig.* 202. has a solid base, and this form is not so easily upset as *figs.* 201. 212.

and 247.; a property which should be taken into consideration in many cases.

The cylindrical form for drinking-vessels (*fig.* 200.) occupies a place between the advantages and disadvantages presented by the conical forms (*figs.* 201. and 202.). It has, however, less pretensions to beauty; because both the other shapes indicate an agreement of form with the end in view, improved by art.

A nearer approach to beauty, with respect to the agreement of the use of a drinking-glass with its form, is presented in the drinking-vessels, *figs.* 203, 204, and 205.; as they possess, together with a richness of form (*Höhenform*), not only all the advantages of the three preceding vessels, viz. in receiving, containing, and giving up the liquid, but also resist exterior and interior destruction, by their curved sides (*gewölbartig*), which the straight side-lines of the former vessels are incapable of doing.

These forms may also be made of all the above-mentioned materials; but wood is not so suitable for them, as the curved sides run counter to the fibres of the wood, and thereby counteract the purity of the shape.

Figs. 206. to 210. represent small wine or liqueur glasses, which are the most beautiful of all drinking-vessels, on account of the variety and perfectness of their forms, arising partly from their particular destination.

According as their use requires :

1. The size of these vessels must be regulated according to the kind of drink they are to contain, and, at the same time, to be such as to expend no superfluity of material ;
2. They must be convenient for laying hold of, and setting down ; and
3. They must have a presenting (*darbietende*) or retentive (*behaltende*) form, according as the nature and use of the spirituous liquid in the vessel may require.

Thus, for example, *figs.* 206. 208, and 209. have the open or presenting form of what is commonly called a rummer (*Römers*) or hock-glass, and *fig.* 210. the retaining or conservative form. *Fig.* 207. is equally adapted for the presenting or retaining form.

If we choose to apply to these five different forms Hogarth's wavy line, or line of beauty, together with his other concomitants of the beautiful, the beauty of these vessels would be apparent ; but, as we allow that beauty and perfection presuppose the agreement of a rich form with the end in view, we think we shall more certainly discover these properties as we proceed ; as the end in view must be taken into consideration before the form, and not, in a contrary sense, form take precedence of the end in view.

The size of the vessel will, in this case, also be determined by

the kind of drink it is to contain, and will be limited nearly to the quantity of wine or spirituous liquor that is usually taken at a time.

But, as this size is not sufficient to allow of the vessel being taken properly hold of with the fingers, and would, besides, appear too small in comparison with the other furniture of the table, and escape our notice among the other glasses, a foot (Fuss) must be added, whereby the above-mentioned disproportion will be obviated.

The space for containing the liquid, the foot, and the handle (Griff), must, as a rich whole, be formed in proper proportion to each other, and to the end in view, if the forms are to be beautiful and perfect.

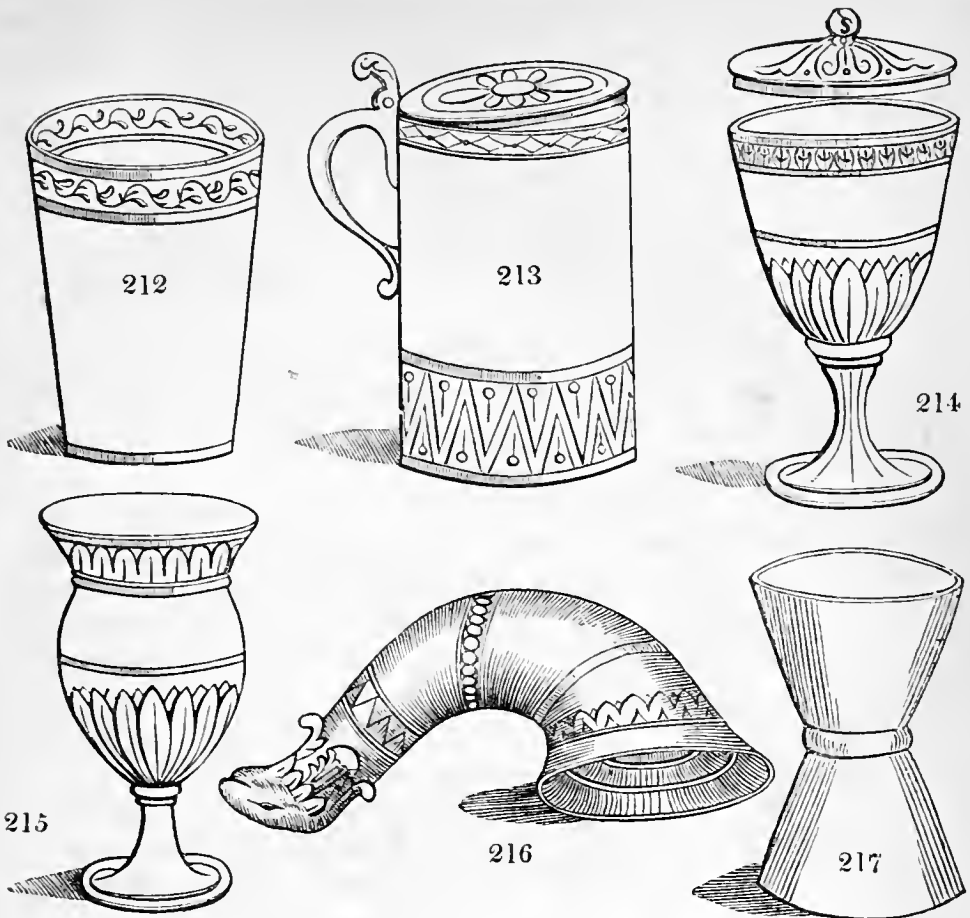
That the sides (Höhenform) of *fig.* 210. are not so perfect as *fig.* 209., and *that* not so much so as *fig.* 207., and *fig.* 207. not so pleasing to the eye as *figs.* 206. and 208., can be easily explained; because we can readily imagine the inwardly curved form of *fig.* 210. either higher or more truncated, and, therefore, it does not appear strictly complete.

Fig. 209. we could also imagine increased above; but we hesitate, because the base of the foot, together with the diameter of the upper part of the glass, must be taken into consideration; and the glass would be very easily overturned, if the conical form of the upper part exceeded the base to any considerable extent.

Fig. 207. ends at top, where the cylindrical form would begin, if the glass were to be higher. It is true that the extent of the form is thereby determined; but, as we could imagine the glass higher, either in a cylindrical or inwardly curved form, *figs.* 206. and 208. are much more perfect, as the requisite height is there more definitely determined by the bulging out at top, and the diameter of the bulging is proportioned to the base. If we were to imagine the base (Grundform) of these five vessels four-cornered, instead of round, the forms would not appear so perfect; because the curved sides of the upper part would be heterogeneous to the base.

Fig. 211. is, like the preceding figures, a small drinking-vessel, for spirituous or warm drinks, without a base (Fussgestell); to which the handle is fixed at the side, on the upper edge.

On account of the limited size, and the almost unnecessary handle, which appears to be added to these small vessels more by chance than in consideration of an end in view (unless the vessel is particularly intended for warm drinks, when, by means of the handle, which does not become very hot, it can be better taken hold of), it is, as an imperfect form, far behind the preceding ones in beauty; neither is this form, nor the upper part of *fig.* 209., so rich as *figs.* 206. and 208., or even as *figs.* 207. and 210., in which



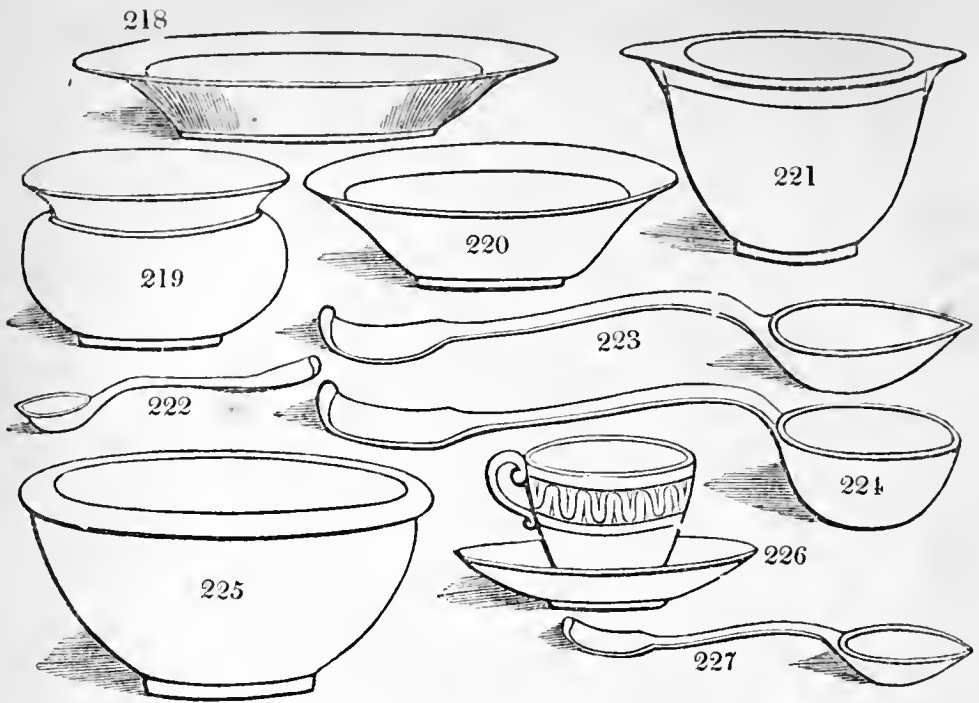
the two first forms express in a peculiar manner the retentive or presenting character.

With respect to the proportion of the space for containing the liquor, to the base or stalk of the glass, *figs.* 207. and 208. are not so perfect in this respect as *figs.* 206. 209. and 210., but the former vessels being intended for champagne, which foams up as it is poured out, gives an ingenious vindication of this form, and the eye easily becomes habituated to it, when we are aware of the reason of the disproportion. Thus the increased height of a beer-glass, when expressly intended for foaming beer, would not offend.

Figs. 212. to 215., are cups, chalices, and drinking-vessels, from which several persons can drink in turn.

Their perfectness is to be measured by the preceding designs (*Angaben*), in size, form, material, &c. &c. According to the use they are intended for, they must, unless they are very large, have rather a wide presenting (*darbietende*) mouth, and not end in a contracted form like *fig.* 210. If these vessels should require a closed form at top, in order to preserve spirituous drinks, this will be best effected by means of a hinged cover, like *fig.* 213., or by a lid which takes off, like *fig.* 214.

In *fig.* 213., the cover is lifted up by the finger-catch above



the handle, but the lid in *fig.* 214. is taken off by the knob at top: the latter arrangement is more simple, and therefore admits of greater beauty; because it requires no particular mechanism, which is apt to attract the eye from the vessel, and thereby disturbs the consideration of the form (*Formensinn*). Of these four cups, *fig.* 215., on account of its rich ingenious form, is the most beautiful, by uniting in itself the presenting and retentive forms, and every part is equally convenient for drinking out of.

Figs. 216. and 217. are drinking-cups, which are to be emptied in turn by single individuals. When *fig.* 216. is filled, it cannot be set down again before it is emptied.* *Fig.* 217. is a double cup, the empty half of which always becomes the base; so that, as in the preceding one, when it is turned by the drinker, it shows that nothing remains in it. These vessels have thus a particular subordinate aim, viz. they should be easily and conveniently emptied at a draught.

This subordinate purpose, however, presents no suitable opportunity for peculiar beauty; and, instead, we can only have ornaments such as we see on some of those vessels which have descended to us from antiquity. Neither can the double glasses display any ingenuity of form; as, from their being intended to be turned, one vessel must serve as the base, and thus answer a very different purpose to that for which it was formed. It cannot, therefore, be equally perfect for both purposes.

Figs. 218. to 221. 225. and 226. are forms of plates, bowls,

* This form is also made use of for horns of plenty, because it readily displays or presents the riches of its contents.

dishes, and cups, particularly for warm liquids, which are to be drunk, or taken with spoons. Their forms, which, to allow of the evaporation or escape of heat, must be wide at top, or have a wide surface, are capable of no particular beauty; yet it may be added by ornaments on the surface, as by paintings and decorations, such as we see in Etrurian and other antique vessels, as well as on our porcelain. The two ears (Griffe) in *fig. 221.* are, on account of their symmetrical arrangement, more beautiful than the handles in *figs. 211. and 212.*

As the champagne glasses, *figs. 207. and 208.,* have the upper part enlarged to allow for the frothing up, or foaming, of the wine, so the saucer, in *fig. 226.,* is placed below for warm drinks, to enable the drinker to hold the vessel without burning himself; the saucer serves also to cool the liquid, when it is poured into it from the upper vessel.

Fig. 222. is a German tea or coffee spoon, used merely for tasting and stirring the liquid; *fig. 227.* is a spoon for eating with; *figs. 223. and 224.* are punch and soup ladles, for large quantities. These four articles, which also are included in the circle of drinking-vessels, must be of a size proportioned to their use; and be also of a size and shape both convenient for the mouth, and for holding while helping.

On account of their shape, and necessary solidity, they can only be made of metal or wood. As their form is only taken into consideration in so far as it supplies the necessity, and as the form of the stalk and the vessel can have no agreement or eurhythmy with each other, they are not capable of any particularly beautiful form, and can, at most, be only convenient.

Fig. 230. is a Roman foliette, or wine flask, which the inn-keepers use for pouring out the wine. Its form is, indeed, ill-shaped, and its parts are not quite eurhythmical to each other; because the short neck bears no proportion to the lower part: but it answers the end in view in many respects, for,

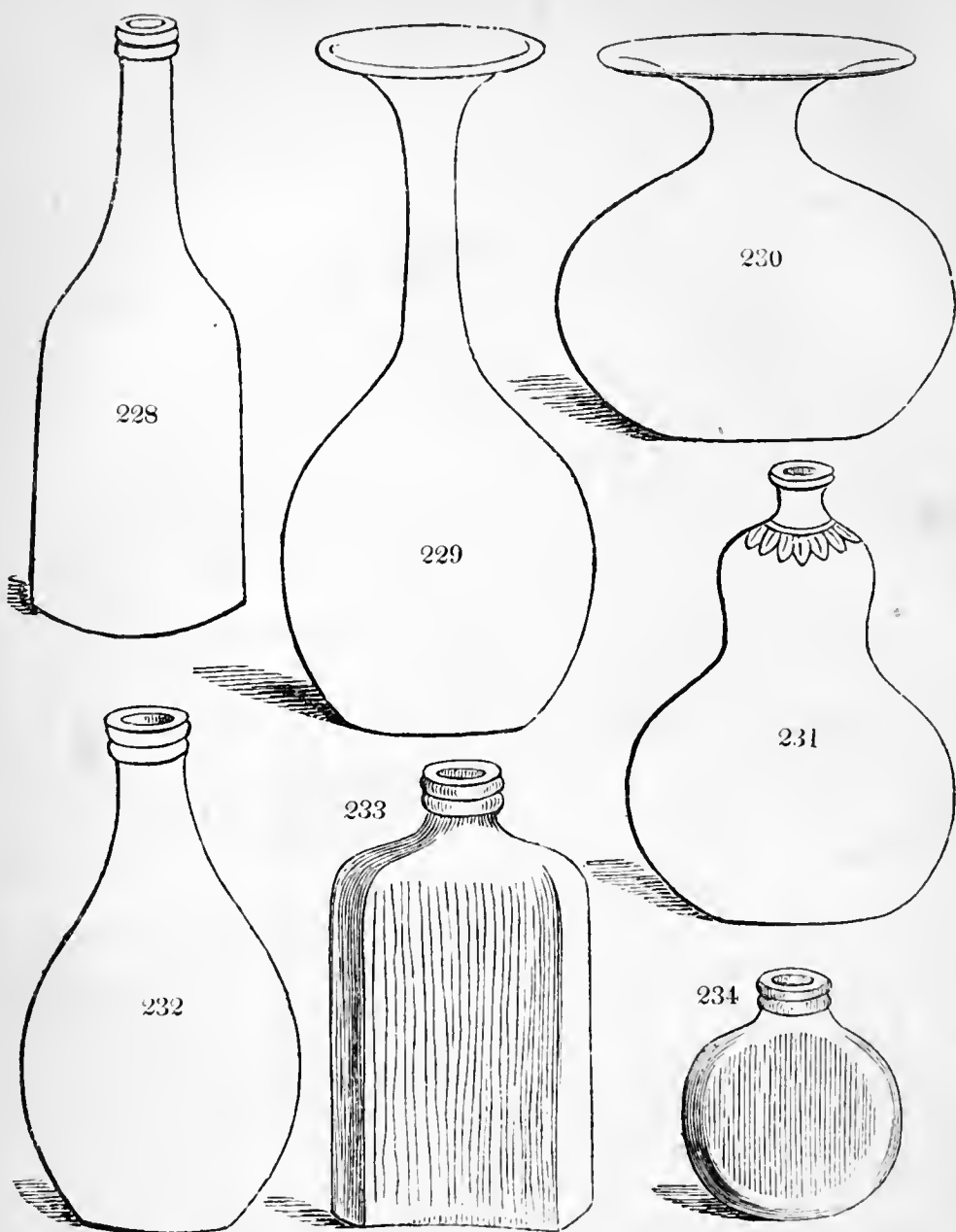
1. This bottle is not easily upset; and, when it does fall, the liquor only runs half out;

2. The forms of the base and sides withstand the internal and external pressure; and

3. These bottles can be easily filled without the intervention of a funnel.

This sort of vessel, however, should not be made too large; because, in that case, it could not be easily laid hold of.

Fig. 229. is an Italian publican's bottle (Wirthsflasche), which is used for drinking out of in the Terra Felice, in the territory of Naples. It is like the preceding one, except in the long neck, which is to be seized with both hands. As it must be suitable for a bottle and a drinking-glass at the same time, and, therefore, confined solely to an economical purpose, it can have



no particular pretensions to beauty ; and, without expecting elegance, we admire, at most, the fitness of the form, which unites several purposes at once in itself.

Figs. 232. and 234. are travelling and drinking glasses for spirituous liquors, which are used by pedestrians. The form is elliptical, as far as the mouth, so that it may not project far from the body when carried in the pocket ; and is also curved, in order to resist, as much as possible, external and internal pressure, and thus avoid breaking. For the same precaution, the glass of *fig. 232.* is often surrounded with plaited straw or willow.

Fig. 233. is an almost four-cornered bottle for the bottle-case of a carriage. It has the square unsolid form, to allow of many

such bottles being packed close together. Here the purpose alone determines the form; and, without having pretensions to beauty, it is suitable to the end in view, which is the first consideration here, and, therefore, not to be blamed.

Fig. 231. is a pilgrim's water bottle, or gourd, as it is produced by nature. The form corresponds perfectly with the intention of such a vessel, which should contain, in the smallest bulk, the greatest hollow space for liquid, and should be of the lightest material, and of a strong form. This gourd is particularly appropriate, with respect to its lightness, as well as on account of its round form (*Grundform*), and doubly curved sides (*Höhenform*), which resist external and internal pressure, in a very ingenious manner: but, as it, as well as the three preceding forms, are limited to a very particular aim, none of them can be rendered beautiful; while the double protuberances of this figure, one over the other, even give it a somewhat unseemly look.

Fig. 221. is a German wine bottle; where the chief things to be considered are, that it does not easily break, preserves the spirit of the wine properly, and is convenient for laying hold of and setting down.

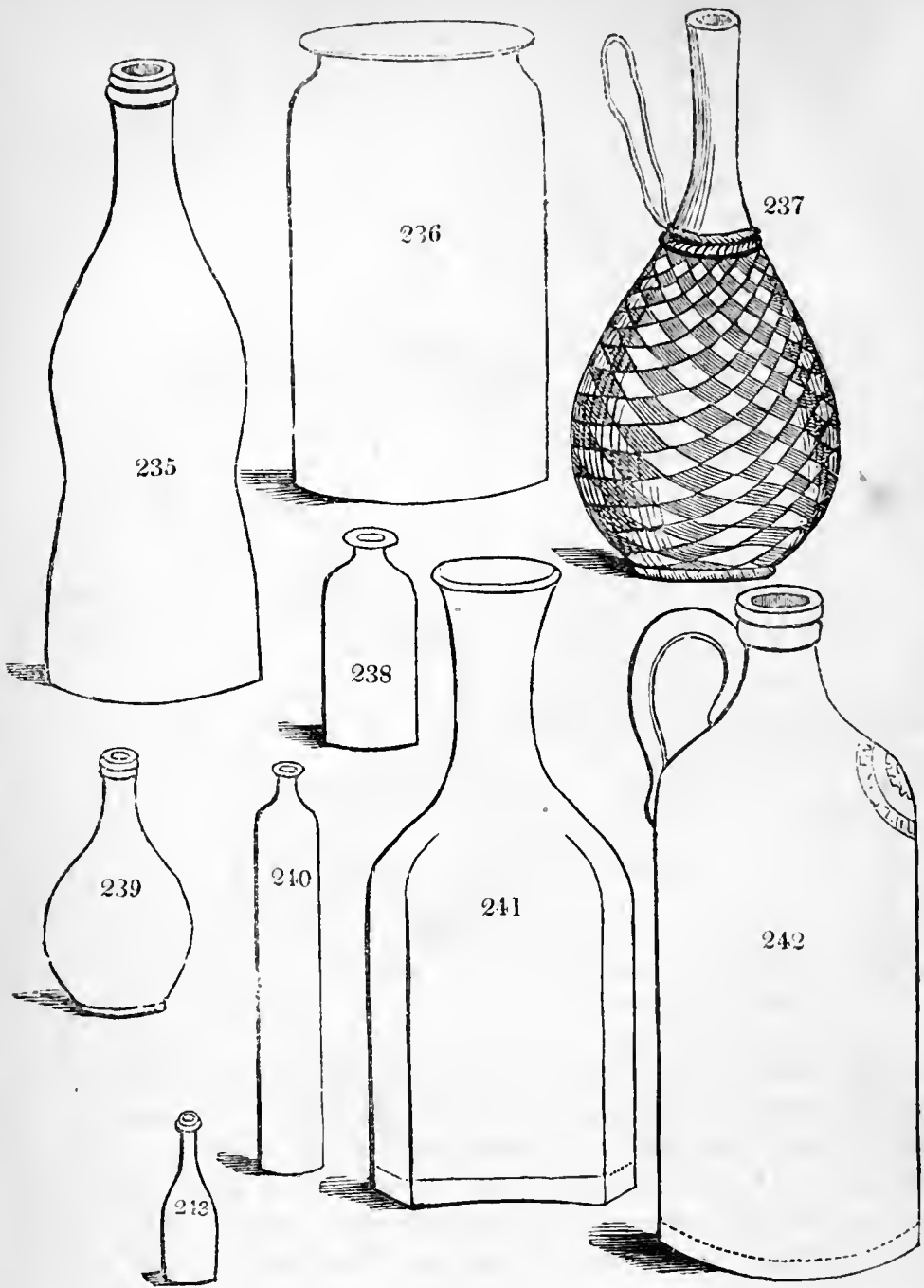
Although the form of this bottle perfectly corresponds to the end in view, yet, as it is the mere offspring of necessity, it is not susceptible of much beauty.

In the same manner, *fig. 237.* is perfect, as a Roman wine flask (*Orvetto Flasche*), for economical purposes; but beauty is not requisite in this case. But little glass is used in making it; and, as the sides are very thin, the vessel is usually surrounded with a plaiting of straw, to preserve it from injury; and as in the preceding bottles the mouth is stopped by a cork, in this case a superstratum of oil answers the same purpose, to prevent the escape of the spirit of the wine, and to allow it sufficient room for play, otherwise it would break the bottle.

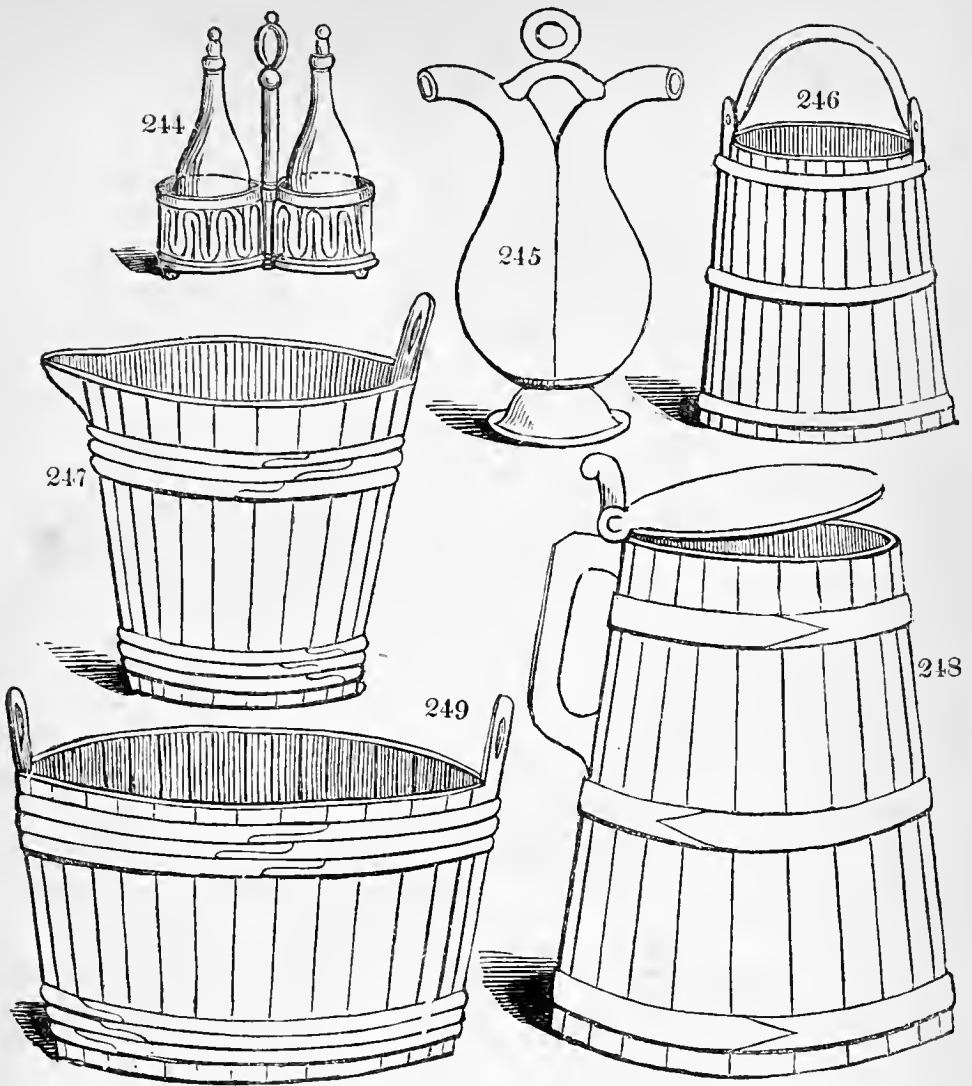
Fig. 235. is a Prussian beer bottle, which is nearly of the same shape as the German wine bottle (*fig. 228.*), and differs from it only in bulging inwards in the lower part, which resists the pressure of the beer within, in the manner of an arch. This bottle resembles the pilgrim's bottle (*fig. 231.*) in shape, and answers the end in view equally well.

Fig. 242. is a beer or mineral water pitcher, used in the south of Germany; which, as well as the three preceding vessels, is suitably formed, but not beautiful. Instead of the neck serving to hold by, this pitcher is provided with a distinct handle, little calculated to give the whole the stamp of beauty.

Fig. 241. represents a wine or beer bottle, such as is made use of by innkeepers in the south of Germany. As the innkeepers generally keep them as an ornament, ranged in rows in cup-



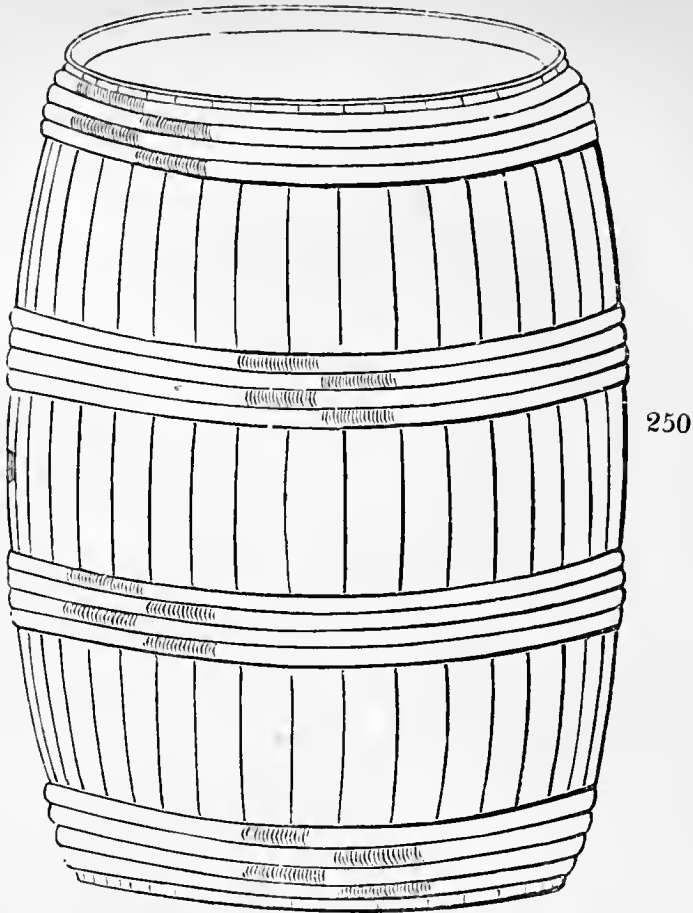
boards with glass doors, they are almost square below, to occupy little room ; and are only distinguished from the bottle for the travelling-case (*fig. 233.*) by the round neck, which serves as a handle. In this case, however, the neck is in better proportion than that of *fig. 233.*, and eurhythmical with the lower part. For the sake of strength, and to prevent the lower sides of the bottle from being pressed in, and also to resist the internal pressure, these bottles are, for the most part, concave ; by which means, only the corners, which cannot be so easily pressed in, are exposed to danger.



The vessels *figs.* 236. 238, 239, 240. and 243., are used for keeping spirituous liquors, medicine, &c., and are closed at top with a cork, covered with resin or pitch, or tied down with a bladder. This sort, also, is referable merely to economical purposes; and, like the preceding, excludes beauty, as the form throughout is strictly determined by the end in view, and cannot be altered.

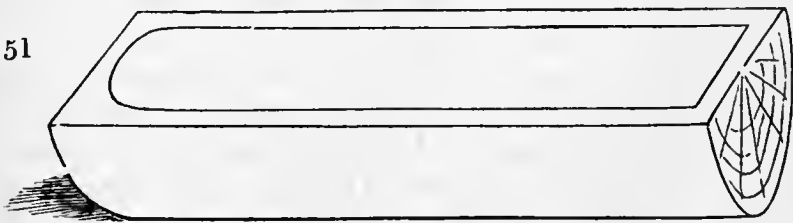
Figs. 244. and 245. are oil and vinegar vessels, which are used at table. *Fig.* 245., in which the oil and vinegar bottles, for the sake of convenience, are blown, or smelted (*geschmolzen*), together, belong also to the same list. On the contrary, *fig.* 244., in which both bottles have a stand, is susceptible of a freer and more beautiful form than even *figs.* 206, 207, 208, and 209. The form of the stand is less fettered, that of the bottle is partly concealed, and the whole accomodates itself more to the character of the ornamental than that of the necessary.

The wooden vessels, *fig.* 246. (a water bucket), *fig.* 247. (a

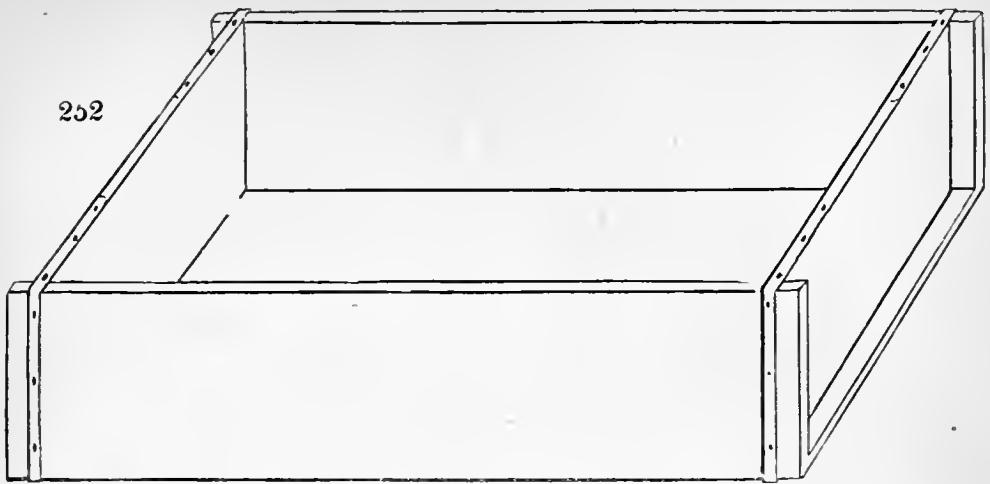


milk pail), *fig. 248.* (a beer mug), *fig. 249.* (a water tub), and *fig. 250.* (a beer or wine cask), have merely an economical end in view, and therefore cannot be made beautiful, but only suitable. The shapes of these vessels, which, according to the structure of the wood, should either be conical or curved, in order that the hoops, which hold the pieces, or staves, together, may be firmly knocked on, must be either contracted and preservative, like *fig. 248.*, or spreading and presenting, like *figs. 247.* and *249.*, or in a bulging form, like *fig. 250.*

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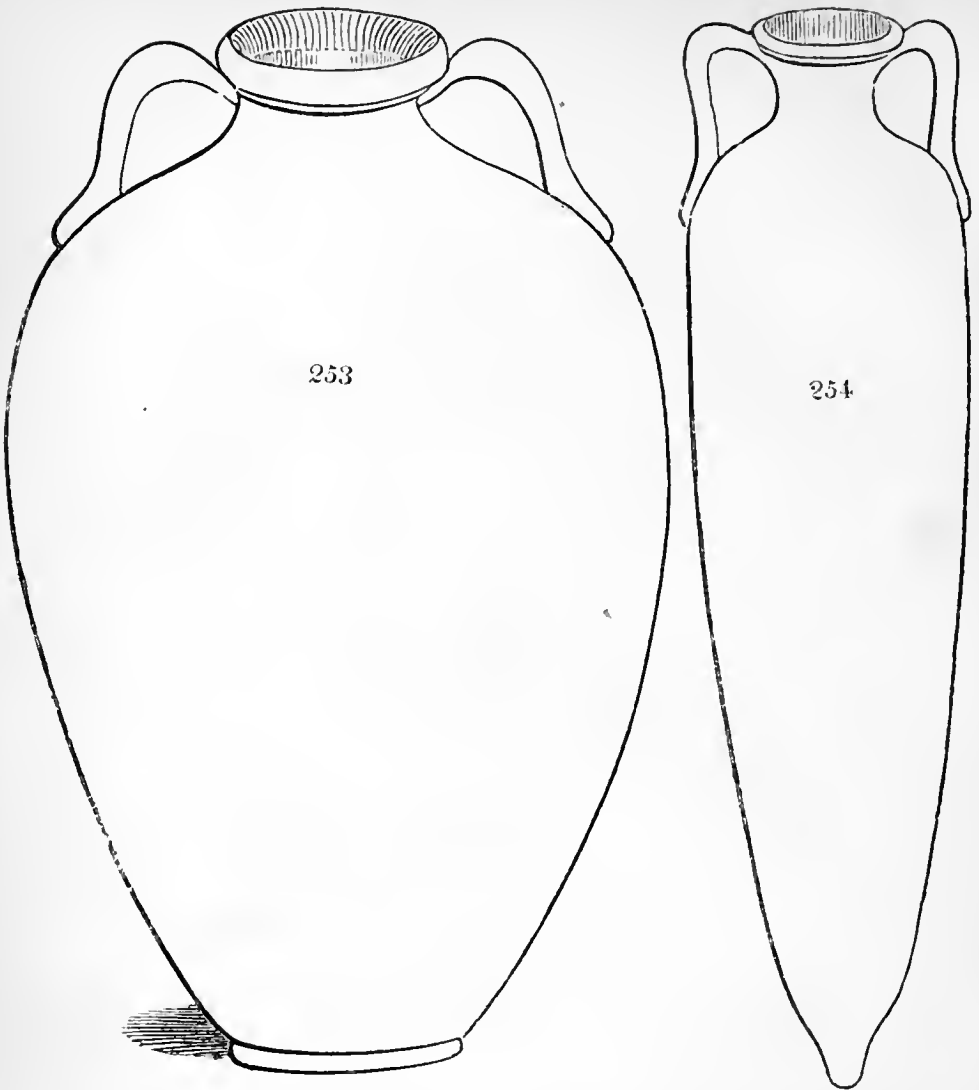


The wooden or stone water trough (*fig. 251.*), and the cooler, or water tub (*fig. 252.*), are purely for useful purposes, and, therefore, could not easily admit of beauty of form; although, even here, a medium might be found between clumsiness and elegance.



When we see the size of the space for the liquid in a vessel formed of one mass of material, as in *fig. 251.*, limited merely according to necessity, the size of the space causes no particularly disagreeable impression; but when the space, as in *fig. 252.*, appears enclosed in a frame, or case, artificially put together, and also carefully guarded at the corners by iron bands, as is shown in *fig. 252.*, the eye is led from the form to a secondary necessity, which is incompatible with beauty, because beauty presupposes a perfection of materials. By the simple trough (*fig. 251.*), we perceive that form requires to agree with the material; for, if this trough were made of stone, the hole might be angular, instead of round, at the corners, which would not be proper if it were of wood, as this form would weaken the coherence of the sides.

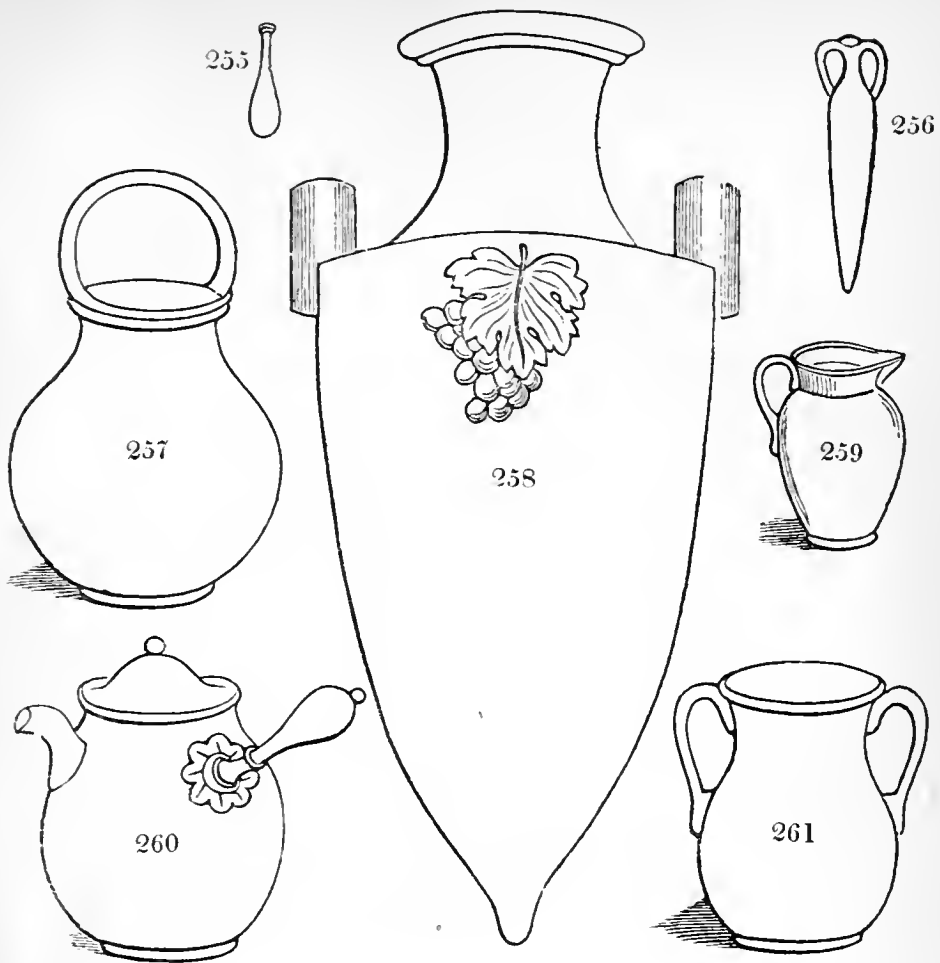
The antique wine pots of burnt stone ware (*figs. 253, 254. and 258.*), on the contrary, which were kept in cellars, buried in sand, and a stratum of oil on the top, to prevent the wine fermenting and the spirit evaporating, are of a more beautiful and varied form, and are proofs that the refined sense of the beautiful among the Romans would not admit of deformity, even in the commonest articles. If we analyse the beauty of these vessels, according to the above views, we will find that *fig. 258.* deserves to be particularly distinguished, as it displays a perfect accordance of the end in view with a graceful form. *Fig. 253.*, on the other hand, possesses the least beauty. This form, also, confirms, in some measure, the remark previously made, that neither pure mathematical figures, nor the bodies that approach them in form, have any particular beauty. Thus, for example, low vessels, such as the plates and dishes (*figs. 218, 219, &c.*), whose sides (*Höhenform*) are very low, have fewer pretensions to beauty; because broad forms bear in themselves more the character of inactivity, inanimation, &c.; while, on the contrary, a tall form displays most life, elegance, and lightness. In this



sense, the vessels *figs. 254. and 258.* are much more beautiful than *fig. 253.*; at the same time, *fig. 258.* is, on account of the beautiful eurhythmical proportion of the neck to the lower part, much more beautiful than *fig. 254.*, in which the neck appears too short for the other parts of the figure.

Fig. 254. further shows that eurhythmical proportion, or the agreement of the breadth or thickness of the object with the height, is also one of the requisites of beauty, and an over-exaggerated slenderness or prettiness is not always beautiful. The two lachrymatories (*figs. 255, 256.*), which I introduce here among the drinking-vessels merely by way of example, display the same.

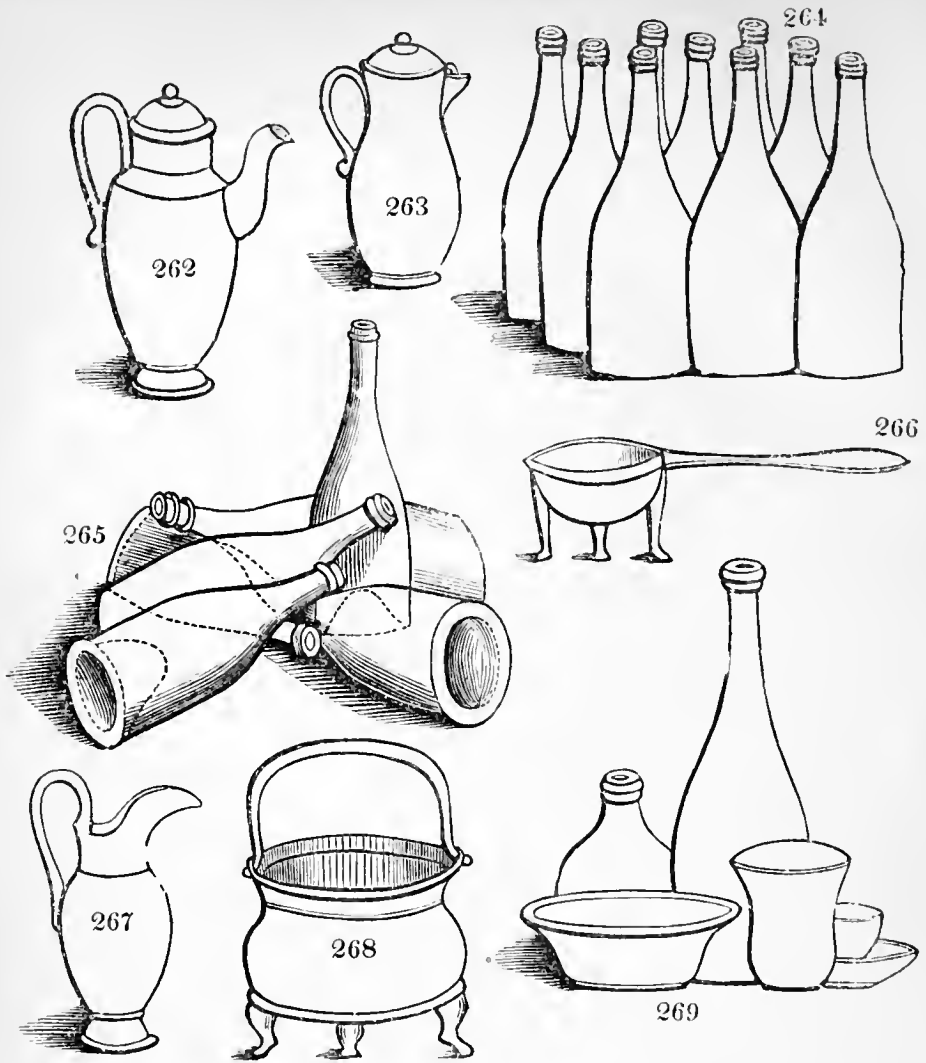
It remains for me still to give some examples of the symmetry of objects, as an essential condition of the beautiful; and I select for this purpose the common German vessels for warm drinks, such as tea, milk, coffee vessels, &c. Symmetrical beauty may have less weight in painting, but, in architecture,



and, more especially, in the plastic art, it is of the greatest importance.

Figs. 257. 259. and 261. are three different water pots, whose forms, though possessing no particular beauty, are yet interesting to us from their characteristic handles. The handle of *fig. 259.*, for example, makes this vessel particularly convenient for pouring out. *Fig. 261.* can, though tolerably heavy, be conveniently moved from one place to another with both hands; and the vessel *fig. 257.*, by means of the handle at top, can also be conveniently carried.

If the handles of these vessels are observed, they display, though totally different, on the whole a symmetrical arrangement; in as much as, in *fig. 259.*, the spout shows the front, and the handle the back; in *fig. 261.*, the opposite sides are both alike, and in *fig. 257.*, the handle, passing over the top, makes both sides alike also. *Fig. 260.* is a German teapot, which answers very well for pouring out; but, as the handle is not opposite to the spout, but placed intentionally at the side, this vessel is thereby rendered imperfect in point of beauty. In the coffee and milk pots, *figs. 262, 263. and 297.*, on the contrary, in which the handles, as in *fig. 259.*,



are at the back, the symmetrical arrangement is not neglected; and they may therefore be considered much more beautiful than *fig. 260.*; whereas, the rest of their figure corresponds with the foregoing remarks. But, in order that the eurhythmy may not in any degree be disturbed, these vessels should only be made of metal, on account of the fragility of form of the spouts and handles.

It cannot be denied that the handles of these vessels, as in *fig. 260.*, appear rather too artificially applied, and that they would be more pleasing to the eye if without them; as, for example, in *figs. 206. to 209.*: but as these vessels are chiefly for warm liquids, and cannot be taken hold of like a glass full of cold liquid, on account of the transmission of heat, these prominent handles, through which the heat is not so easily transmitted, are suitable, and even justifiable, when made of wood, and applied to a vessel of metal.

That no attempts have yet been made to improve our household utensils is evident in the somewhat unpolished forms of the handles *figs. 266. and 268.*, which only serve the purpose of removing vessels with warm contents from the fire.

Having thus shown the most essential forms of our German drinking-vessels in detail, I will add a group of several vessels, and demonstrate how much the eye delights in variety of form in one, as well as in several objects, when arranged according to certain eurhythmical laws.

Thus, for example, *fig. 269.* forms a pyramidal group of various vessels, where the eye rests first on the bottle of medium height, and then turns with equal pleasure to the varied forms on either side; after which, it lingers on the whole with increased pleasure, in order to take in clearly the entire picture, according to its harmonious combination. The more we concentrate these vessels, and confine them to the smallest space, so that we can only distinguish the outline of the principal form of each, the greater will be our gratification.

If, on the contrary, we imagine these vessels more separated, so that the forms do not intersect each other (an einander greifen), and that they no longer form a group; or that the tall bottle is no longer in the middle, but at the side of the others; then the picture has lost its charm, and all that rendered it interesting to us: because, with forms exactly alike, our natural feeling, appears to be directed to a strictly symmetrical arrangement; but, with dissimilar forms, to one approaching as nearly as possible to symmetry; and we find the type of such an arrangement in nature itself.

If, for example, instead of these six different vessels, which display a richness of forms, we were to imagine six vessels of the same form; for instance, six bottles of the same shape in one group; then, a varied grouping should not take place, but these bottles should rather be placed in a strictly symmetrical manner, as in *fig. 264.*; or partly standing, and partly lying near, or on each other, as shown in *fig. 265*; in order to form a picturesque group, and one which should not displease by its monotony.

That a numerous row of the same forms is agreeable to the eye in a uniform arrangement, while, on the contrary, various diversified figures please when grouped together in a manner not too strictly symmetrical, in case the forms should not harmonise symmetrically among themselves, may be partly observed in the army, where the monotonous uniform pleases us most in rank and file; whereas, on the contrary, we prefer seeing persons differing in attire as well as in age and sex, in groups and varied forms. Several uniform objects ought, therefore, to be grouped in strictly symmetrical order, as in *fig. 264.*; or presented to the eye, as in *fig. 265.*, in various positions, only so that the sum of the forms may please as a whole in a picture,

Much might here be said of the proper grouping or arranging of different pictorial (*bildlich*) objects, when a pleasing picture is to be formed, for the use of the young painter, sculptor, &c.;

because the principal figure is often heightened by trifling objects, or because many objects, particularly when various in form, do not always display a pleasing and beautiful picture, from every point of view; but this further explanation forms no part of my present plan.

ART. IX. *Design for an Architectural Bookcase.* By G. B. W.

IN most professions, and in none more so than in that of an architect, a library of reference is almost indispensable. The books he requires are expensive, and ought to be properly housed, and guarded from injury; one or more bookcases or shelves become therefore essential, and, by the exercise of a little ingenuity and taste, may be rendered very ornamental.

An architectural bookcase, from its having to receive books of all sizes, from the ponderous folio to the "chubby duodecimo," necessarily differs from those adapted for general libraries; which seldom contain the largest-sized books, and are not provided with shelves sufficiently deep or high for such works as Stuart's *Athens*, &c.

Having noticed, in the *Architectural Magazine* for August last, a sketch for a bookcase of this nature, it occurred to me that an account of one constructed some short time since from my design, might be considered worth insertion.

Of this bookcase, which I desired to render, though plain in character, somewhat indicative of its contents, *fig. 270.* is the plan.

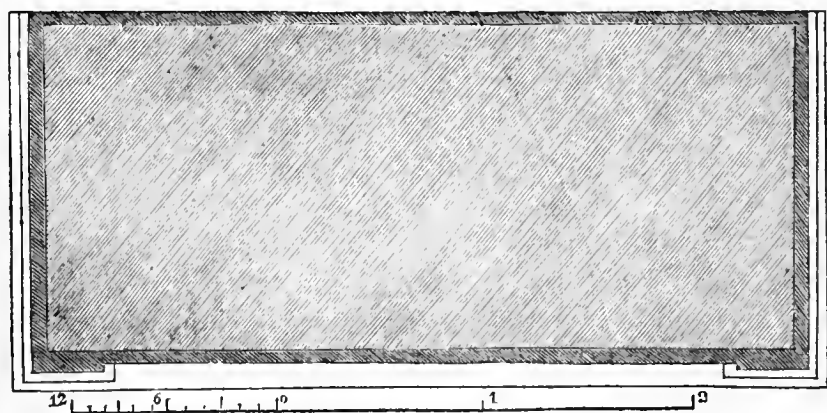
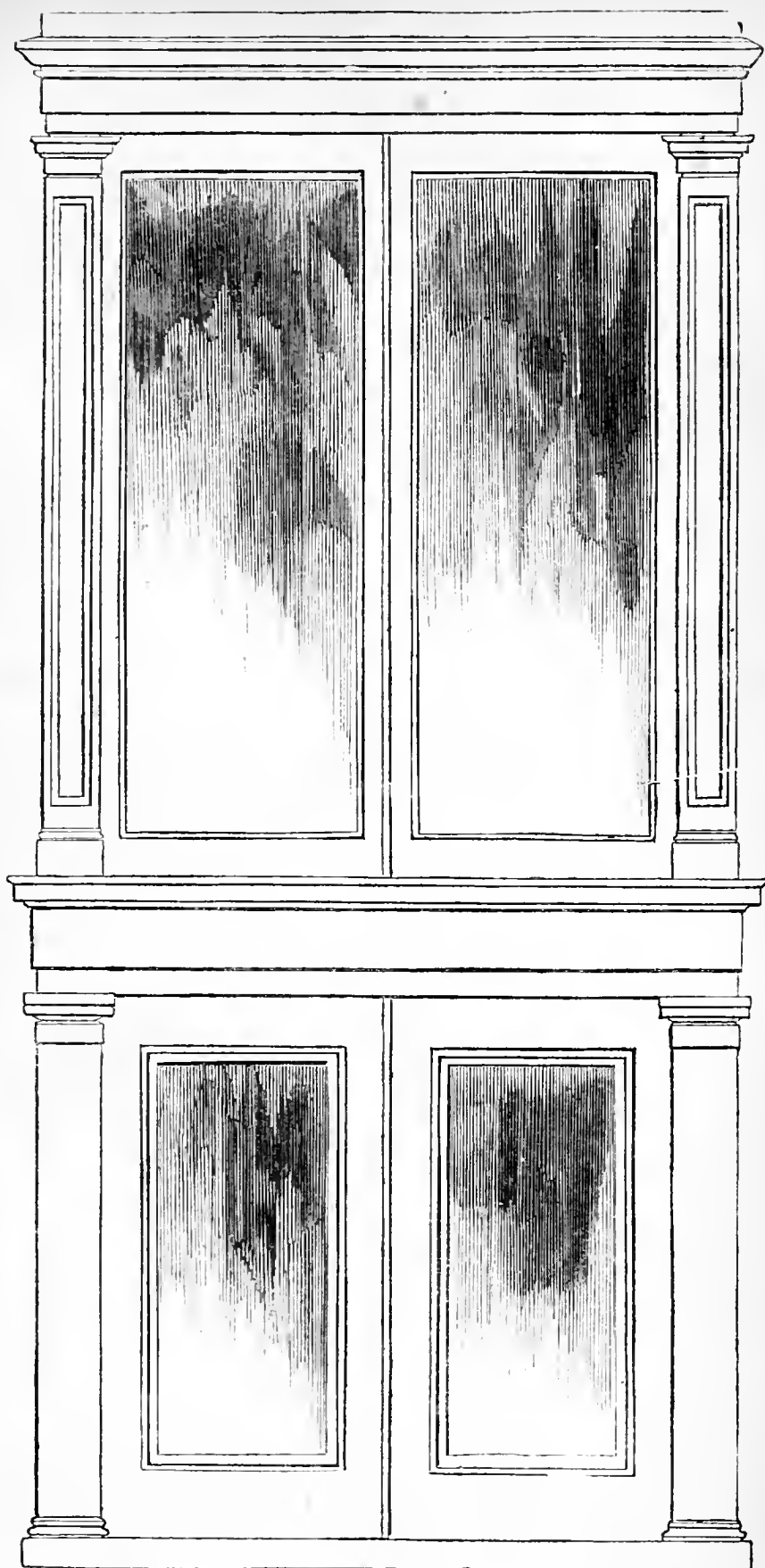


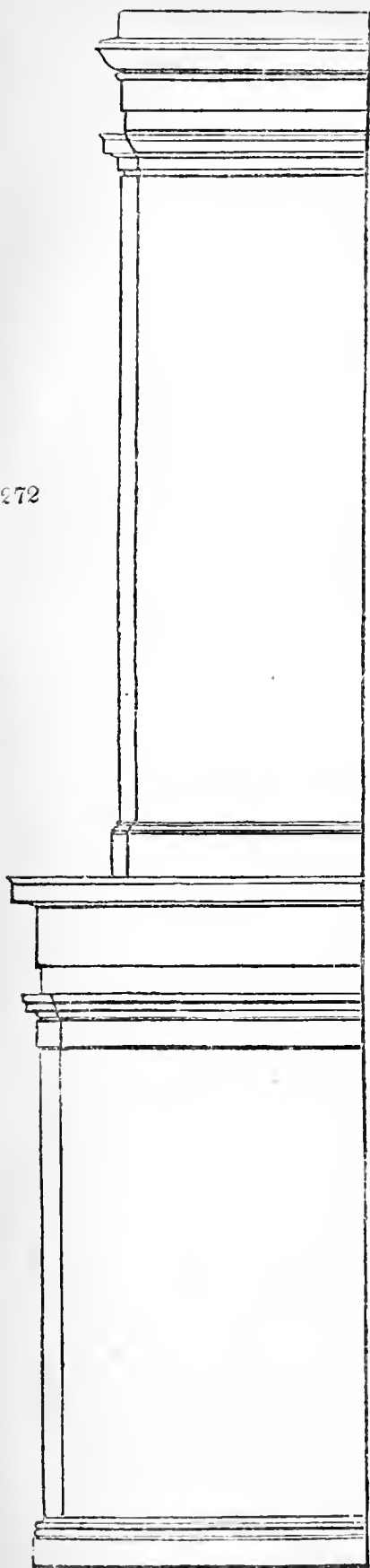
Fig. 271. is the front elevation. The upper pilasters project $\frac{5}{8}$ in. before the face of the door style, and the lower pilasters project $\frac{1}{2}$ in. The sizes of the plate glass, including a $\frac{1}{2}$ in. rebate all round, is, for the upper panels, 3 ft. 6 in. by 1 ft. $2\frac{3}{4}$ in.; and for the lower panels, 2 ft. $1\frac{5}{8}$ in. by 11 in.

Fig. 272. is the end elevation.

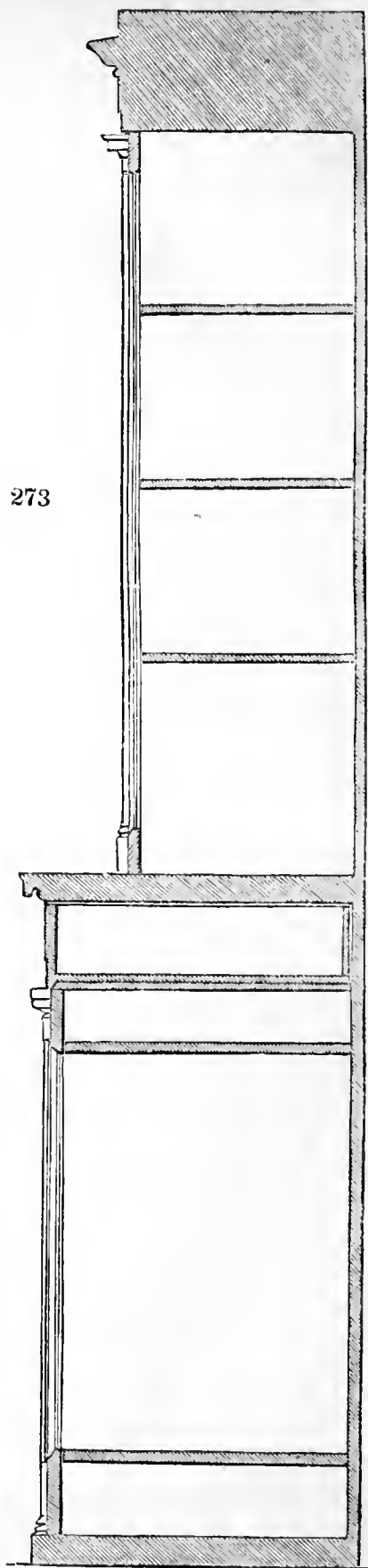


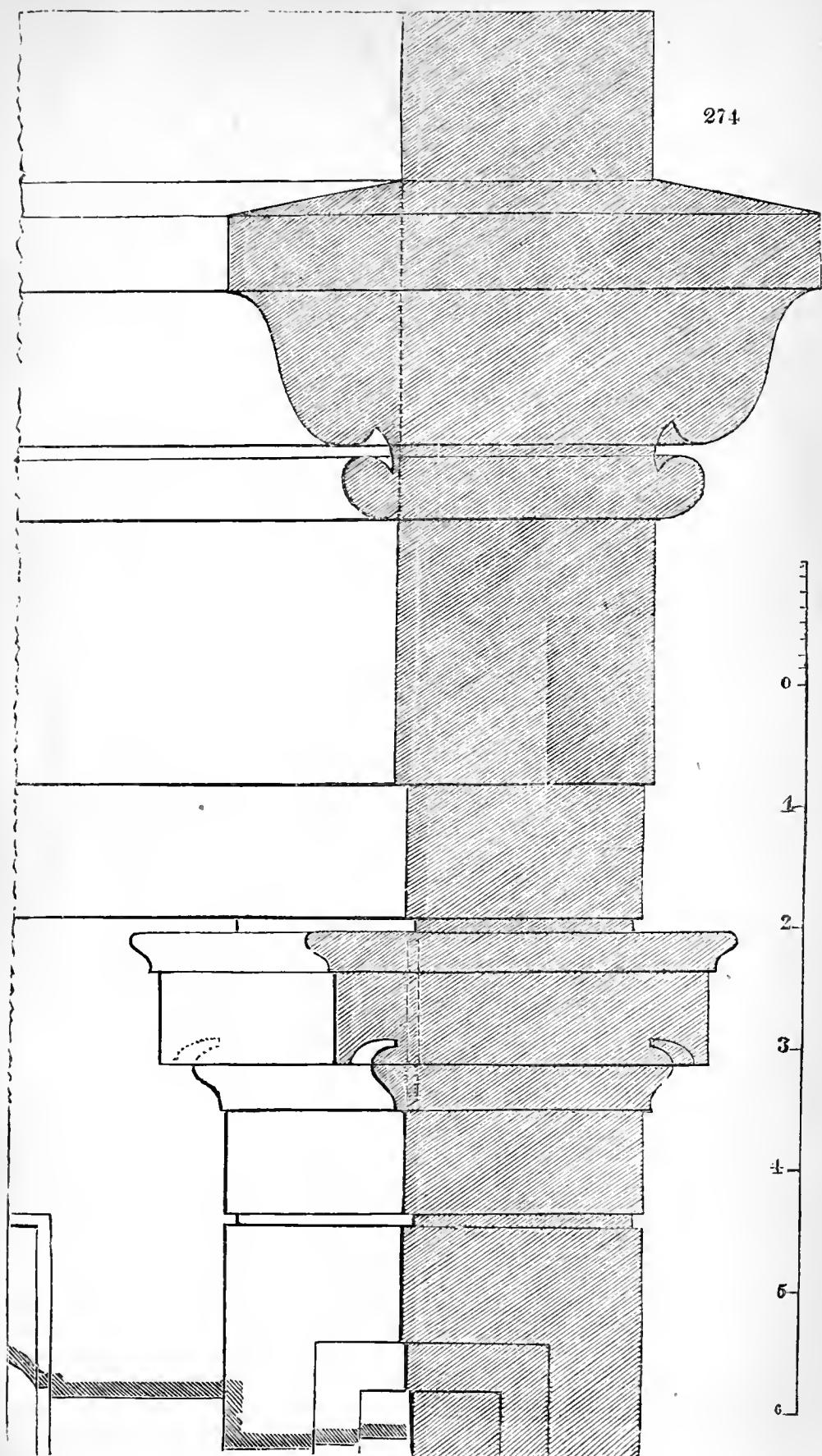
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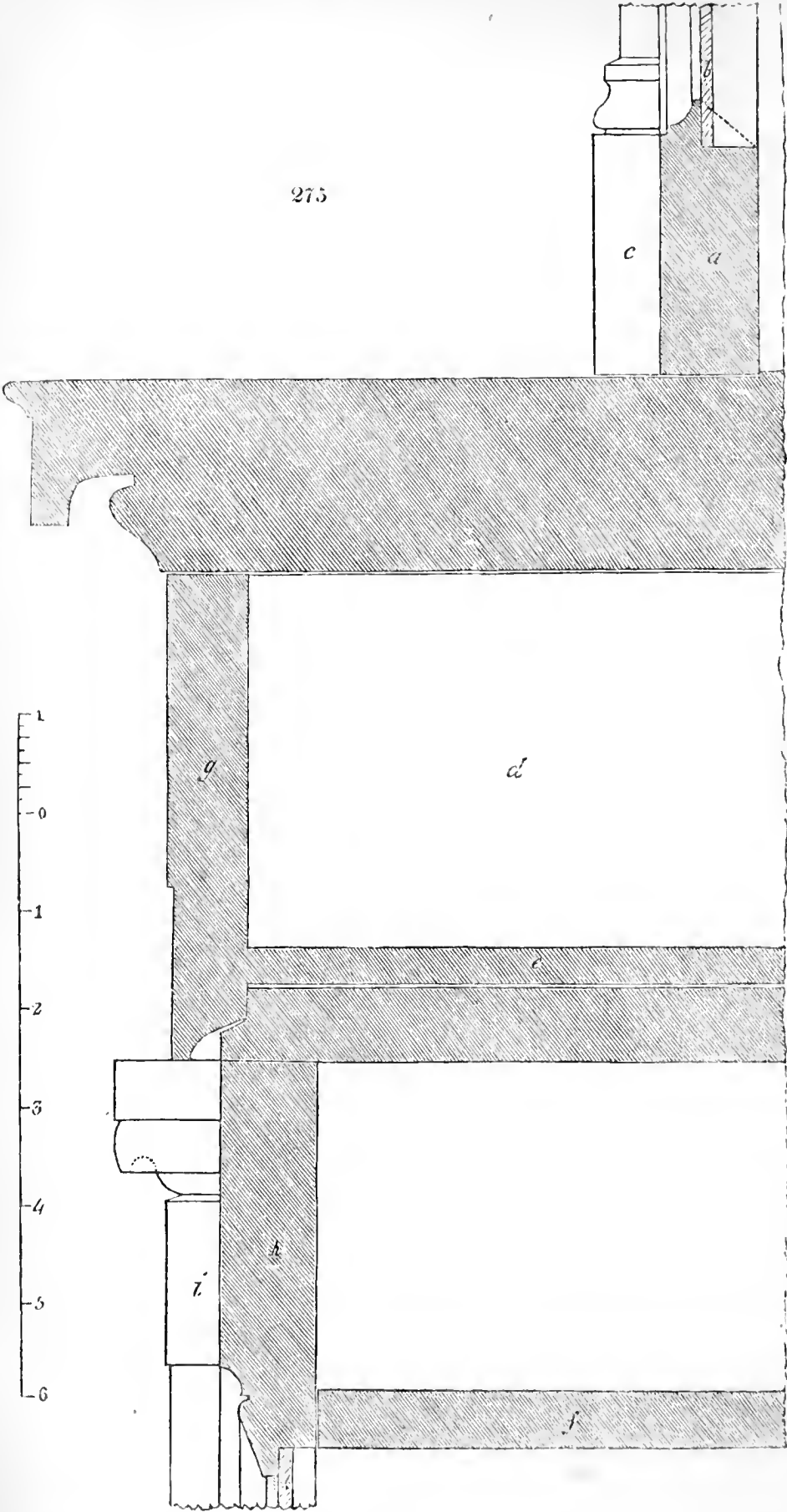


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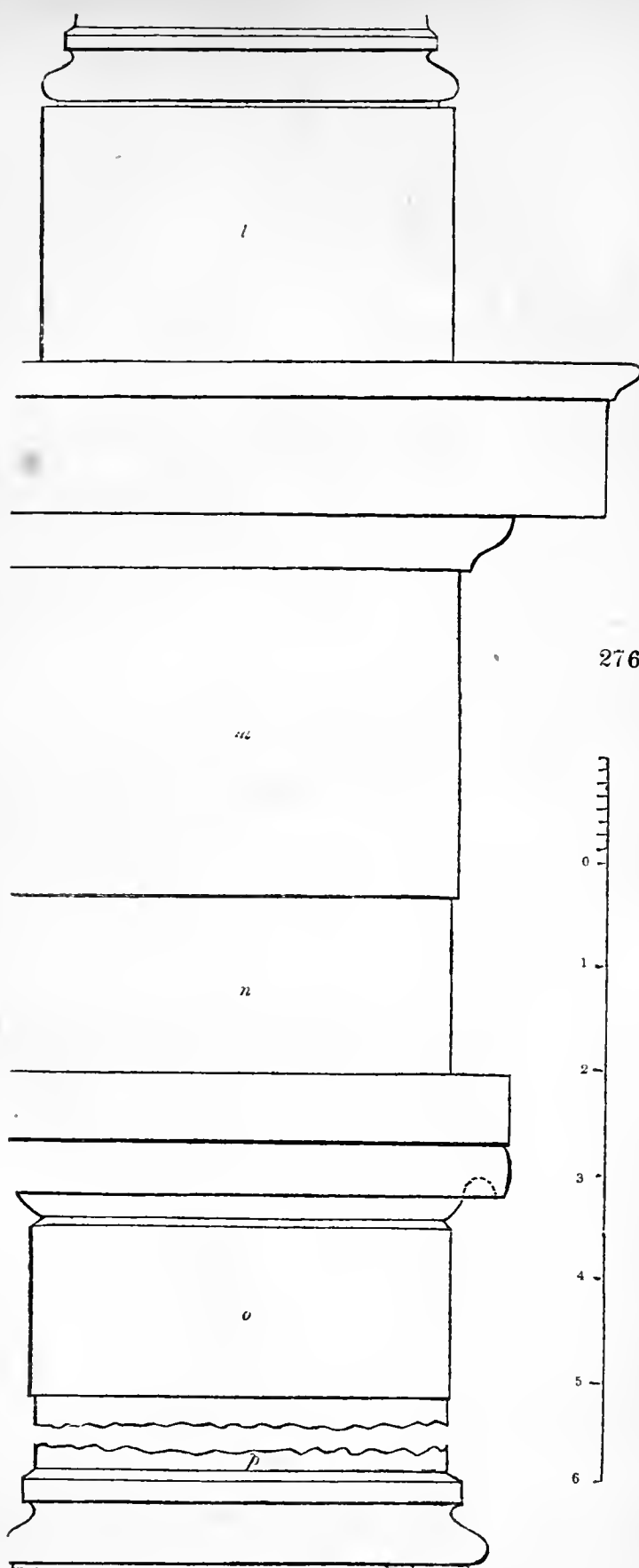


Fig. 273. shows the section. The last three figures are drawn to the same scale as that affixed to the plan (*fig. 270.*).

Fig. 274. shows the details of the cornice, frieze, cap of upper pilasters, &c.

Fig. 275. shows the details of the pilasters, entablature, &c., where *a* is the bottom rail of glazed door; *b*, plate glass in upper panel; *c*, return of upper pilaster; *d*, drawer; *e*, bottom of drawer; *f*, shelf; *g*, front of drawer forming the frieze; *h*, top rail of door; *i*, return of lower pilaster; *k*, plate glass in lower panel.

Fig. 276. shows the elevation of the pilasters, &c., in detail: *l* is the base of upper pilaster; *m*, frieze; *n*, architrave; *o*, cap of lower pilaster; *p*, base.

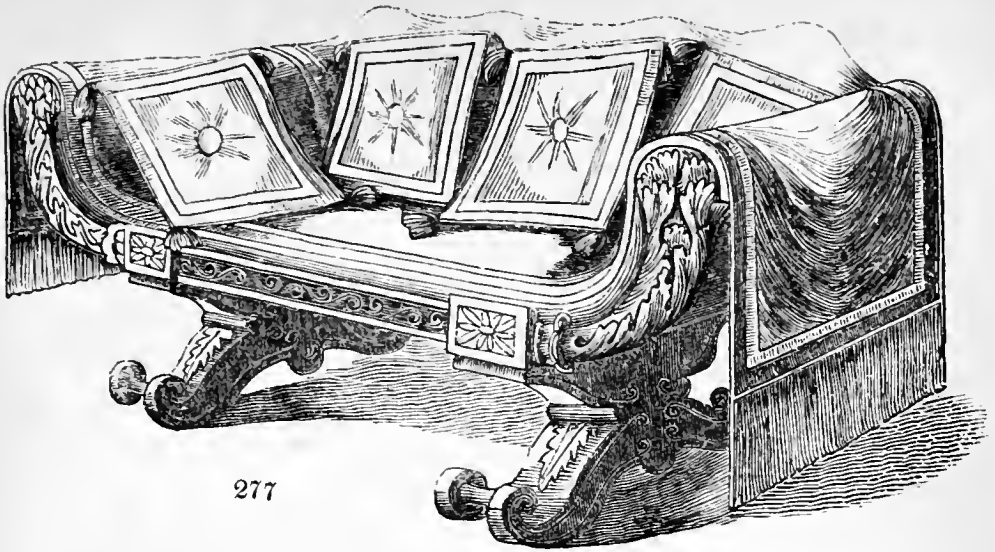
The upper and lower doors are hung so as that the pilasters may form parts of the styles; the upper pilasters project $\frac{5}{8}$ of an inch, and the lower $\frac{1}{2}$ an inch before the faces of the styles. The doors are filled in with single panes of plate glass, which, in the lower, form the panels, and being surrounded by the mouldings, in the manner of picture frames, display the larger books to much advantage. The shelf upon which these stand being made level with the top of the bottom rail, and the height of the glass panels being regulated by that of the folios, there are spaces above and below them, the depth of the rails (hidden when the doors are closed), which are very useful for portfolios, drawing-paper, and other articles which may be laid flat. The plain faces of the entablature over the lower pilasters form the front of a drawer, which is very useful for papers, &c. This shows no joint, nor is there any knob or ring for pulling the drawer out, as it is closed by a spring underneath, and cannot be opened without unlocking the lower doors.

I cannot conclude without saying that I agree with the opinions expressed by Mr. Lamb, in his article upon furniture; that, until upholsterers show some disposition to improve upon the stunted and distorted parodies upon architectural ornaments which they sometimes introduce, architects may usefully employ some portion of their time in endeavouring to reduce the chaos thus created to something like proportion and beauty, and without at all detracting from the dignity of the art they profess.

London, Feb. 23. 1838.

ART. X. *Design for a Sofa.* By L.

I SEND you a sketch for a sofa, which is something out of the usual form, but which may be made of almost any material. The squabs are square, and movable at pleasure; the seat is stuffed below them; and the covering is carried on over the back

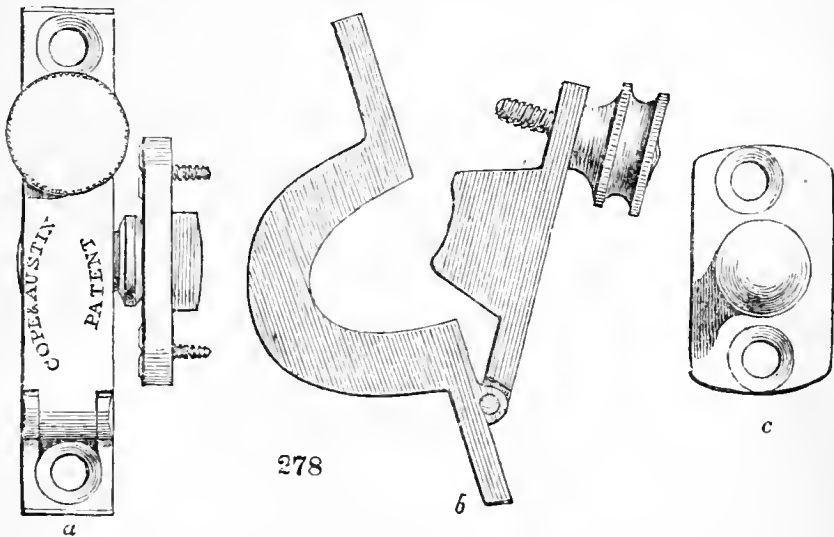


and arms, hanging in loose drapery, and finished by a rich fringe. The legs are richly carved, and very massive.

London, June, 1837.

ART. XI. Notice of a new Fastening for a Dressing-room Swing-Glass. By W. F. D.

THE object of this fastening, which is represented in *fig. 278.*, is to give the power of fixing the swing looking-glass in any one position. This is done by compressing a movable portion of the case in which the gudgeon works, by means of a screw. The contrivance will be very easily understood by *fig. 278.*; in



which *a* is a front view of the apparatus, the gudgeon being in its socket, and the plate and screws seen, by which this socket is fixed to the support of the glass; *b* is a section showing the movable portion of the socket, and the screw which is used for compressing it; and *c* is the front view of part of *b*. This

invention was no sooner made known, about a year ago, than it came rapidly into use among the London cabinet manufacturers ; and there can be no doubt that it will soon be spread all over the country, It is known by the name of Cope and Austin's Swing-Glass Fastening.

London, August, 1838.

REVIEWS.

ART. I. *Illustrations of the Public Buildings of London ; with historical and descriptive Accounts of each Edifice.* By Pugin and Britton. Second Edition, greatly enlarged by W. H. Leeds. Two Vols. 8vo. London, 1838.

THE readers of the *Architectural Magazine* cannot be ignorant of Mr. Leeds's eminence as a critic and writer on subjects of architecture, even judging by those articles alone which are avowedly from his pen. The *Illustrations of the Public Buildings of London* has been so greatly improved by Mr. Leeds's notes, as well as by his expunging portions of the text, that it might almost pass for a new work. At all events, the critical opinions of Mr. Leeds, following those which had been previously given by Pugin, Britton, Brayley, Papworth, and others, render this second edition so totally different from the first, that no possessor of the first edition need hesitate to become a purchaser of the second.

" Besides the additions both in regard to plates and their descriptions, others to a very considerable extent have been made by the present editor, both in the form of notes and of remarks appended to the accompanying letterpress by other writers. The opinions of the latter have been left untouched by him, even when decidedly at variance with his own ; in order that the reader may adopt whichever shall appear to him the most judicious and the best founded. All that has been done in the way of altering the original letterpress, has been confined to abridging several of the articles, by paring away what was evidently extraneous matter, what related only very remotely indeed to the buildings themselves, and was by no means in accordance with the character of a work that is most undisguisedly of a strictly architectural nature." (Pref., p. vi.)

The omissions, we have no doubt, have been most judicious ; for what can have been more unsuitable, in such a work, than " The Progress of the Drama in England ?" As well, Mr. Leeds truly remarks, might the account of St. Paul's have been accompanied by a " Theological Dissertation on the Church of England ;" or that of the Law Courts, by a " Commentary on the Statutes at large." And all this, while " many of the articles were so barren of remark and criticism, so overloaded with details to be collected from Topographical Histories, and bearing only incidentally upon the professed subjects, that the former bore

about the same proportion to the latter, as the item of bread did to that of sack in the fat knight's bill." After thus approving of the labours of the present editor, we can only spare room to give an idea of the contents, and some extracts.

Vol. I. describes twenty-two churches, nine theatres, and three law-buildings, including the House of Lords.

Vol. II. describes twenty commercial and civic buildings, ten buildings connected with literature, thirteen palaces and private mansions, and seven bridges.

In the Preface, speaking of the use of architectural criticism, the author has the following very judicious remarks: —

"The excuse that is frequently made for the reticence of criticism in regard to buildings is, that they speak sufficiently clearly for themselves; and so they certainly do, provided they are adequately illustrated by explanatory engravings; yet, even then, only to those who are familiar with the language they make use of, and merely as relates to them as objects. What is plainly exhibited to the eye in an engraving of course requires not to be described in words also; consequently, whenever an elevation of a building is given, it is mere repetition and reiteration to point out *seriatim* the parts of which it is composed. Yet it does not exactly follow, that there is likewise no occasion for critical comment and remark; on the contrary, these latter are then most of all serviceable when that which is the subject of them is clearly understood. Whatever, too, they may happen to be in themselves, such remarks have, at least, this beneficial tendency, that they serve to fix attention upon much which would else be passed over without observation; consequently, if erroneous, at least they direct notice to those points which may be reconsidered by others, and treated by them with greater diligence and acumen. Another, and not the least, advantage attending criticism of this sort is, that it teaches people to think and judge, and shows them how much there is to be observed and attended to in order to do so properly. Besides all which, it invests the subject with that interest which should belong to it in common with the other fine arts, but which has hitherto been kept almost entirely out of sight. It may mainly be ascribed to this last-mentioned circumstance that, as a study, architecture has so very few votaries beyond its professional pale, so very few lay students who apply themselves to it merely for the sake of the intellectual gratification it is capable of affording. Most persons have taken up with the notion, that it is impossible to attain any adequate knowledge of the art without becoming familiar with all its mechanical and practical operations also; which is about as extravagant as it would be to fancy that a man must have handled the chisel or pencil himself, and be well acquainted with all the processes and arcana of the statuary's workshop and the artist's painting-room, before he can judge of or relish the productions of sculpture and painting. In short, if they cared to be consistent, they would go a step further, and boldly deny at once that architecture is a fine art at all, putting it upon the same footing with those subsidiary arts of decoration which minister to architecture itself. Another prevalent prejudice against the study is, that everything in it depends so entirely upon rules, is so fixed and hemmed in by them, as to afford no room whatever for the exercise of criticism, any more than does the plain fact that two and two make four.

"Without enquiring whether these prejudices and misconceptions are not, in some degree, attributable to the course pursued by professional writers on architecture, who have very rarely, if ever, condescended to accommodate their writings to the general reader, it is sufficient to remark, that none have greater cause to lament the popular ignorance in regard to the art, which has been fostered by those prejudices, than architects themselves. While it leaves them scarcely any competent judges but their rivals, it places them at the

mercy of the self-willed, the obstinate, and the capricious. On the other hand, the public are quite as much at the mercy of pretenders in the profession. It is in vain for people to demand excellence, so long as they admit that they are incompetent to discriminate between talent and no talent; in short, do not understand either the beauties or defects of an architectural composition. Thus, although their interest and object ought to be the same, both parties mutually accuse each other.

"Such a state of things is not a little injurious to the best interests of architecture itself. And architects ought, by this time, to have discovered, that the better informed the public in general are in respect to their art, so much the better both for that and for themselves. In proportion as architectural topics can be made to engage general attention, and rendered matter of conversation and discussion in society, so will the public take a livelier and more extended concern in the art. In this respect, something has been done of late years by the establishment of the *Architectural Magazine*, which, there is every reason to suppose, has been the means of leading many to direct their attention to a study which, if rationally pursued, is not without its allurements for others besides professional men.

"More recently, another periodical has appeared, entitled the *Civil Engineer and Architect's Journal*, which, in conformity with its title, devotes itself more particularly to strictly technical and practical matters, yet by no means to the exclusion of more popular subjects. Both these publications have already effected some good, in disseminating a taste for such studies, and in diffusing more enlarged and liberal views in respect to the æsthetic principles of architecture, than have hitherto prevailed.

"How far the editor's own criticisms, here offered to the public, satisfactorily exemplify what he recommends, must be left to the reader to determine. At all events, they are in no very great danger of being found fault with on the score of not entering sufficiently into details, or of being too dry and formal. Leaving alone what may be thought of many of the opinions and remarks they contain, they will strike different persons very differently; because some will relish them all the better for that on account of which others will probably object to them. The writer who attempts to accommodate himself to the particular taste of every one will please no one; whereas, he who satisfies himself will at all events have the luck of pleasing some one, and be apt to write naturally, if not originally.

"Should what has been done be found to give satisfaction, the editor will most probably resume his task, it being in contemplation to carry on the work by at least one additional volume." (Pref., p. xiv.)

With the following note we entirely agree : —

"It is greatly to be feared that neither the Institute of British Architects, nor any similar body as yet formed, will do much for the advancement of the art generally; for the simple reason, that the removal of what is at present the greatest obstacle to it forms no part of their scheme. Granted that those institutions are every way calculated to promote professional studies, and improve the taste of architects themselves, they leave the public just in the same condition as before; since they do not even attempt to diffuse any knowledge of the art among the people, or to render it a popular study: on the contrary, they seem rather willing to let it be imagined, that, although it ranks as one of the fine arts, architecture differs from the rest in this, that it cannot be appreciated even as such, except by those who are initiated into the practice of it, and acquainted with its mechanical processes." (Vol. ii. p. 193.)

The following extract gives a specimen of what we consider judicious architectural criticism popularised : —

"In his plans for Regent Street, Mr. Nash adopted this idea of uniting

several dwellings into a single façade, so as to preserve that degree of continuity essential to architectural importance; and, however open to criticism many of these designs may be, when considered separately, or in detail, he has produced a varied succession of architectural scenery, the aggregate effect of which is picturesque and imposing, certainly superior to that of any other portion of the metropolis; and, notwithstanding all its defects, far preferable to the naked brick walls that universally form the sides of our old streets. The terraces in the Regent's Park may be considered as a continuation of this design, and, like the street, an improvement upon our usual style of private houses; yet we must also be permitted to say, that, although so far commendable, they are by no means the most chaste or elegant specimens of architectural composition. Owing, perhaps, to the desire of abandoning the petty scale and character of ordinary houses, these buildings are designed in an air of pretension which they cannot support. On a cursory view, they present an idea of palaces; but more minute inspection shows these seemingly spacious edifices to be only clusters of common-sized dwelling-houses. The windows and doors are by far too numerous, and too closely crowded together; a circumstance sufficiently proving the extreme economy it has been found requisite to employ with regard to space, and making it obvious that the apartments are by no means lofty, nor otherwise on a magnificent scale. There is likewise a sketchiness, if we may so term it, an inconsistency between the affected grandeur of the design, and the poverty, in many instances, of the detail, that excites no small degree of disappointment in the beholder.

"These defects are certainly no little drawback on what must else be allowed to be a considerable improvement upon our system of street architecture; neither can it be denied that some of these groups of buildings appear to have been erected without that due consideration and study which characterise the profound architect. This is, we think, particularly the case with Sussex Terrace, it being one of the most faulty of all, both with respect to its general arrangement and the style of its architecture. Its curved plan is not only a positive defect, as regards the houses whose fronts are thus bent, but is absolutely productive of no beauty whatever in the elevation; or, rather, it is as ungraceful to the eye as it is incommodious for interior arrangements. As little can be said in commendation of its numerous small doors, which neither harmonise with the character of the structure, nor are in proportion with the other features: they seem rather to belong to Turkish than to Grecian architecture. The extremities of the building, consisting of two semihexagonal bows, separated only by two columns, with a window between them, have a particularly heavy and uncouth appearance, the columns seeming to be confined or crammed in between these projections. There is, likewise, a strange and very offensive want of keeping between the several features, the nakedness of some serving only to render the fantastic style of others more glaringly incongruous. In short, the whole has too much the air of being an experiment in bricks and mortar." (Vol. ii. p. 363.)

ART. II. *A Series of Lithographic Drawings on the London and Birmingham Railway*, by John C. Bourne; with *Topographical and descriptive Accounts of the Origin, Progress, and general Execution of that great national Work*, by John Britton, F.S.A., Author of the "Architectural and Cathedral Antiquities of England," "Dictionary of Architecture," &c. Inscribed, by permission, to the Engineer and Directors of the Company. Part I. Folio. London, 1838.

"THE present work will comprise a series of thirty-three, or more, finished sketches, as executed by the artist on the respective spots, and transferred by himself to stone, with scrupulous fidelity. At the conclusion of the work,

and with the last number, will be presented to the subscribers a brief Topographical and Descriptive Account of the Origin, Progress, and general Execution of this great national Line of Railway; with Descriptive Notices of the Scenes and Objects delineated in the different drawings."

The lithographs which will be contained in the whole work are the following. Those marked with a * being given in this first part: * No. II. London Entrance Gateways, with Offices, &c. No. III. View of covered Area adjoining the booking offices. * No. IV. View of Parts of a Bridge under the Hampstead Road, &c. No. V. View under the Hampstead Road Bridge. No. VI. Excavations and Buildings, Park Village. * No. VII. Eastern Face of the Bridge over the Regent's Canal at Camden Town. * No. VIII. View at the Camden Station, showing the Locomotive Engine House, the Chimney shafts of the Stationary Engine House, &c. No. IX. View of the southern Entrance to the Tunnel at Primrose Hill. No. X. View of the curvilinear Embankment, near Watford. No. XI. The River Colne Viaduct, near Watford. * No. XII. View of South Face of Watford Tunnel. No. XIII. East Face of Nash Mill Bridge. * No. XIV. Horse Runs, showing the raising of Ballast on the Embankment at Boxmoor. No. XV. View of the Oblique-arched Bridge at Boxmoor. No. XVI. Bridge over the Railway for Gravelpath Lane, near Berkhamstead. No. XVII. Deep Cutting, with Horse Runs, near Tring. No. XVIII. Jackdaw Hill, Lindslade, from the South-East. No. XIX. East Face of Denbigh Hall Bridge. * No. XX. View of the Embankment at Wolverton, during its Progress. No. XXI. View of the Wolverton Viaduct, from the South-West. Nos. XXII. and XXIII. showing different Portions of the Blisworth Cuttings. No. XXIV. The Weedon Viaduct, from the East. Nos. XXV. and XXVI. Interior of the Kilsby Tunnel, and Entrance to the same. No. XXVII. Engine and Head Gear for raising Skips in the Shaft to Kilsby Tunnel. No. XXVIII. Pumps at the same Tunnel, with the Engine-Houses, Gins, &c., in the distance. No. XXIX. Brick Fields at the Kilsby Tunnel. No. XXX. View of the Viaduct over the River Avon. No. XXXI. View of the Sherbourne Viaduct, near Coventry. Nos. XXXII. and XXXIII. Views of the Birmingham Station. The second part of the work will appear in November, and the two following parts at intervals of two months afterwards.

Of the artistical merits of the lithographs we cannot speak in too high terms; and as portraits, having passed along the whole line from London to Birmingham, they appear to us, as far as we could judge in that rapid transit, sufficiently faithful. For both these results, it is a great advantage that the same artist who made the drawings from nature should have also transferred them to stone. "The drawings were made during the years 1836, 1837, and 1838; and were intended as subjects of pro-

fessional study, as scenes and compositions replete with picturesque effect and artistic character, rather than with any intention of their publication. As they increased in number, they increased in interest; and, as they have collectively afforded both amusement and information to many amateurs and men of science, by whom they have been examined and applauded, the artist is induced to submit them to the ordeal of public criticism, by which their intrinsic and relative merits will be duly and fairly appreciated. They are intended to show the letter as well as the spirit of railway formation, by representing not only localities and accompaniments on the line of road in its completed form, but embankments, viaducts, tunnels, and bridges, in such various stages of progress as to exhibit their practical formation and construction." It is added, that they are on that account likely to gratify both the lover of the picturesque and the man of science: the former, by variety of lines and combinations; and the latter, by different modes of application of machinery, mechanism, and manual labour.

ART. III. *An Historical Essay on Architecture.* By the late Thomas Hope. Illustrated from drawings made by him in Italy and Germany. Royal 8vo, 2d edition. London, 1835.

(Concluded from p. 478.)

CHAP. XXXVI. *A brief Examination of various Conjectures as to the Country in which pointed Architecture originated.* The pointed style our author considers to have originated among some of the religious orders, or among some of the freemasons, who were, during those ages, in the exclusive possession of architectural knowledge. Where the pointed style was first exhibited he considers uncertain, and of little consequence with reference to the hypothesis of its origin. He concludes:—

“We should much less depend upon the means of ascertaining the birth-place, derived from the comparative dates of its specimens, such as we can obtain, than upon the inferences drawn from the appearance, tendency, and internal qualities, of the new modifications.”

CHAP. XXXVII. *Inquiry into the Claims of England to the Invention of pointed Architecture.* The author fairly infers that, if the pointed style had originated in England, that country would have possessed some of the finest specimens of it.

“England has no cathedral, in the pointed style, approaching in width those of Antwerp, Paris, Cologne, and Milan; in height, those of Amiens, Beauvais, Paris, and Rheims; in richness of decoration, those of Amiens, Rheims, Ratisbon, and Como: can offer no parallels to the towers of Utrecht, Antwerp, Mechlin, Ulm, Friburg, and Vienna; for height of the entrance, to Strasburg, and Toul, and Ratisbon; for filigree delicacy of overspreading network, to the choirs of Beauvais, Cologne, Aix-la-Chapelle, and Bordeaux; for lantern

lightness within, and boldness of flying buttresses without, to the cathedrals of Antwerp, Paris, Rheims, Milan, and many others; for majesty of the double aisles circulating all round the nave, transepts, and sanctuary, to those of Paris, Chartres, Amiens, and Rheims; for height, width, depth, number, or size of figures, to the spires of Autun, Freyberg, Bordeaux, and Strasburg; for elegant adornment or open-work tracery, to the naves of St. Ouen at Rouen, and of Notre Dame at Dijon; for general symmetry and perfection, to the cathedrals of Rouen, Sens, Paris, Bruges, Tours, Rheims, Strasburg, and Como; for the size and elegance of their marigold windows, in the front and transepts, to Rheims and Como; for magnificence of canopied pillars, to the Exchange at Antwerp, to the Kaufhaus, destroyed in the revolution, at Mayence; and to numberless houses in the cities and châteaux in the country, in France and Germany, for elegance of civil architecture."

Chap. xxxviii. *Inquiry into the Claims of France and Italy.* France has claims to an earlier adoption and a grander display of the pointed style than England, but none to its original invention. Italy may have been the origin of almost every modern art of elegance, but it is not of that of the pointed style of architecture.

Chap. xxxix. *Inquiry into the Claims of Germany.* Wiebeking of Munich attributes to St. Bernward, Bishop of Hildesheim, the foundation of many of the principal pointed churches of Germany.

A great number of cities in Germany became, at an early period, powerful through industry and commerce; and, freeing themselves from the vassalage of their emperor, made themselves independent. Among the corporations of these cities, that of masons held a conspicuous place; and these went about tendering their services wherever they were wanted or acceptable.

"Throughout all ages, the Germans and the Lombards displayed ideas and tastes very different, proceeding from the difference of their origin, climate, and mode of life; but, in consequence of being, in a great measure, ruled by the same sovereign, and brought into frequent contact, a jealousy and rivalry ensued, which German artists and corporations manifested, even in those things which they borrowed from the Italians, by giving to them an exterior form and modification wholly new and different.

"Thence, about the middle of the twelfth century, they changed the written character of the Italians, which still maintained, with the appellation of Lombard, or Franco-Gallic, a round and flexible form, into a character composed of rigid perpendicular lines, connected by sharp cusps, angles, and pediments, like those displayed in the pointed style of architecture, and which, in the beginning of the thirteenth century, attained its fullest bloom and perfection, in a maze of intricate and useless lines and tracery.

"Among the nations of Northern Europe, it met, like the pure pointed style in architecture, with more success; all those that acknowledged kindred with the German race adopted it, only in a somewhat soberer shape, and with less luxuriance or confusion of cusps and crotchets, until, in most of these, in the sixteenth century, the black letter again became superseded by the Latin and the Italian character. As to the Germans themselves, their parental love for this crabbed offspring of theirs has made them retain it to this hour, to the great perplexity of strangers who should wish to make out a German epistle, or to study German literature.

"The Germans, moreover, were the first among the nations of the North who had a school of painting, carving, chasing, engraving, and miniature, of

their own ; and, in a manner, the only nation who, in the productions of each of those arts alike, showed a particular fondness for the introduction of that same peculiar species of ornamental forms which we find in the pointed architecture and the pointed character. So fond were they of combining them in all their different modifications in a single composition, that, generally, in their painting, we see representations of the pointed architecture ; and that both their pictures and their sculpture are commonly intermixed with labels, offering, in moral or religious sentences, their pointed characters.

“ These peculiarities of the Germans being facts, and the invention of the pointed style of architecture (considered as a peculiar system, connected in all its parts) belonging evidently as little to the Italians, as to the other nations hitherto named as claimants of it, I believe it to be the property of the Germans. Because, in the first place, they would, with their priority relative to other Northern nations in respect to the arts, and the *jalousie de métier* of the Italian artists, seek, alike from interest and from vanity ; from the desire equally to increase their fame and their custom among other nations ; to differ from, to improve upon, the Italian freemasons, in the skill and boldness of their constructions ; to strike out a new path ; and this the more, since neither on their own soil, nor in those other Northern regions where their talents and services were chiefly in request, they found, like their Italian predecessors, ancient materials to employ, whose dimensions and whose forms might check the aberration of their taste and the exuberance of their fancy.

“ Because, in the second place, in Germany, and in Germany alone, the more celebrated structures in the pointed style, whether churches, such as the cathedrals of Cologne, Strasburg, Ulm, and Ratisbon ; or steeples, as Cologne, Friburg, Frankfort, Ulm, Mechlin, and Vienna ; offer, in all their different component parts, piers, buttresses, pillars, arches, vaults, roofs, spires, and pinnacles, from the lowest foundation to the highest superstructure, in a degree unequalled elsewhere, a compactness, consistency, and harmony with each other ; a gradual growth of the higher out of the lower, and pyramiding ; an intention, announced from the base, and fulfilled to the summit, of making every part tall, and sharp, and aspiring alike ; proving that, even before the first and lowest was commenced, the size, and form, and weight, and pressure of the loftiest and last must have been calculated.

“ Because, in the third place, in Germany, and in Germany alone, the more celebrated structures in the pointed style, whether churches or steeples, not only possess, in all their component parts, a harmony with, and adaptation to, each other ; but, moreover, in all these component parts, both low and high alike, through their uniform spiriness and sharpness, manifest a peculiar fitness for a climate exposed to heavy snow-falls, that require to be prevented from resting upon, and weighing down, their coverings, and are better contrived to obviate this inconvenience than the pointed edifices of any other country.

“ Because, in the fourth place, in Germany arose, in the pointed style, not only religious structures, but other edifices for civil or domestic purposes, more grand and perfect, and varied, than in any other country : witness, at Nuremberg, the town-hall ; at Mayence, the beautiful Kaufhaus, demolished in 1812 ; and, in imperial and other cities, numerous private habitations of the utmost elegance.

“ Because, in the fifth place, in Germany, and in Germany alone, we have, among the archives of chapters, found actual working drawings of edifices erected, or to be erected, on such a scale, and so complete and minute, as to prove that on the spot, and among the local lodges of freemasons, existed, as well the head that invented, as the hand that executed, those monuments.

“ Because, in the sixth place, in Germany, and in Germany alone, both in some of the latest edifices executed, and in those drawings of later buildings

still intended, we see the pointed style developed in new forms, imitative of the twistings of vine tendrils, of which England and Italy show no specimens; of which France and the Netherlands only show approximations, as in the town-halls of Rouen, of Ghent, and others, which Turner calls the Burgundian style; but of which the only perfect specimens are to be found in German edifices, as shown in the designs edited by Möller.

“Because, in the seventh place, in Germany, the perfecting of the style of pointed architecture was so much valued, that we even find the lodge of freemasons of Strasburg honoured for the building of its cathedral, by being placed at the head of all those of Germany, first in 1458, by an act passed by those lodges themselves at Ratisbon; and next in 1498, by a confirmation of that act, passed at Strasburg, by the Emperor Maximilian I.

“Because, in the eighth place, in Germany, and in Germany alone, at the era when the pointed style showed itself in architecture, it showed itself equally, and in a manner much corresponding, in the productions of the other fine arts; of sculpture, of chasing, of modelling, of painting, of miniature, and even of the pen and the press: it filled these equally with the perpendicular staves, and sharp angles, and multifarious cusps, and pinnacles, analogous to those of edifices in the pointed style; it showed itself universally even in those pictorial compositions where it set both costume and chronology the most at defiance; and gave most incontrovertible testimony that it was not a fashion, imitated from elsewhere, but one proceeding, in all these arts, alike from the same copious native source, the taste and fashion of the German artists themselves.

“Because, ninthly, from Germany alone, the pointed style flowed to, and was introduced in, Italy; since, in that country, nearly all the edifices and monuments, in the purest Gothic style, are either in the provinces that were under German rule, or expressly described as having been designed by Germans: witness the cathedral of Milan, the church at Assisi, and the altar of the Prince of Apostles, in the first basilica of Christendom, in the very heart of Rome. While in the early Italian scriptural compositions we always see the round, in those of the Germans we always see the pointed, arch.

“And because, tenthly and lastly, not only the Italians, in general, call the pointed style German, and regard it as such, but their very authors and artists describe it as having been introduced among them from Germany: witness Vasari, who, while calling it a curse brought from Germany, allows that this curse overran all Italy; and Cæsarianus, who expressly states that those particular features of the pointed style, the rounded ribs of groins, were, in the twelfth century, substituted for those previously flat, by Germans; all which does not prevent Muratori and Maffei from being right in some respects, in stating that no German ever introduced any sort of architecture in Italy: since the edifices they executed seem to have been designed for their own use, and since the Italians displayed, in the few churches that they constructed after this fashion, no specimens of the pure pointed style, but only an incomplete imitation, as at Orvieto and Siena.”

Chap. XL. *A short Account of some Developements of the pointed Style, religious and civic.* The crusades appear to have promoted the general dissemination of the pointed style; for most of those nobles who returned safe in life and limb were anxious to mark their gratitude to Providence by building or endowing churches. The ornaments of the style varied in different countries; some from Constantinople, and others from Egypt, were adopted.

“After explaining the principle, and allowing to pointed architecture all the merit, which is due to a great degree of science and ingenuity, we should not dissemble that, in its very nature, it had within it a less permanent solidity, a

more active internal source of decay, than those where the pressure was, from absence of arches, all perpendicular; or where, as these were all round-headed, it was much less oblique; and that, moreover, its architects, from the wish to astound the vulgar, and to excel their rivals, by the height, lightness, boldness, and absence of direct internal support in their buildings, often abused the resources which they possessed; so that, from internal weakness, many buildings could never be completed on the original plan; and others, after having attained their full height, have only shone an instant, and then, like a child's edifice of cards, have fallen to pieces; and thus the dotage of age has resembled the imbecility of infancy."

Chap. XLI. *Diffusion of the pointed Style through France, England, Spain, Portugal, and Italy.* In this chapter the author observes that almost all the Italian architects, who adopted the pointed style, introduced into it circular arches.

Chap. XLII. *A List of remarkable Edifices in the pointed Style.* This list is very extensive, and it is illustrated by numerous plates, all, as we have before observed, beautifully engraved.

Chap. XLIII. *Local Peculiarities of Architecture.* Independently of style, architecture is affected by customs, institutions, locality, climate, occupation, &c. At Venice, where the characters of merchants and noblemen are combined, the want of capacious warehouses for goods, and of large halls for assemblies, caused in every considerable mansion the whole central space "to be occupied by one single large room, reaching from back to front; with which all the staircases, passages, and lesser rooms, for those of the domestic circle, on each side communicated: and, in order to throw sufficient light into this room, very deep in proportion to its breadth, the whole of the width in front was occupied by a range of windows, as near to each other as possible, or rather by a continuous window, only divided by intervening pillars, or mullions, which, repeated at every story, gives as great a singularity to the interior as to the exterior of the palaces; and has been equally preserved in those built after the Lombard, the pointed, and the antique style."

Chap. XLIV. *Causes which produced the Decline of pointed Architecture, and Return to an Imitation of the Antique.* These causes the author finds in the increased industry, skill, wealth, and knowledge of the laity; in the decreasing influence of the Church of Rome; and, above all, in consequence of this decreasing influence, the "extinction or expulsion of that body, which should be regarded as agents and satellites of the Pope and of his ministers, which only worked by their support, and under their authority, the body of the freemasons."

Chap. XLV. *Characteristics of the resumed Style of the Ancients; or, in other Words, the Cinquecento Style.* We recommend this chapter to such of our readers, if there be any, as have been accustomed to despise the Gothic.

Chap. XLVI. *Adoption, throughout Europe, of the resumed Style of the Ancients.*

"As, however, for a considerable period after the first revival of arts and sciences, Italy set the fashion in them to the rest of Europe, the nearer approaches to the antique style, in the entire abandonment of pointed arches, and resumption of the ancient orders, also crossed the Alps, and reached successively France, Spain, Germany, and England, though each of these countries, as it was further removed in place from its fountain head, was also later in the adoption.

"In France, where, under Louis XII., who came to the throne in 1498, or, rather, under Cardinal D'Amboise, his minister, the cinquecento style had first faintly dawned; where, under Francis I., it had, in what he added to the Château de Blois, and in the Château de Chambord, made great but awkward strides, it seemed to attain its perfection under the long reign of Henry II., when, by the architect Philibert De Lorme, and the sculptor Germain Pilon, the Cour du Louvre was commenced. It continued to flourish, with greater or less success, until, under Louis XIV., Perrault, in the great façade of the Louvre, entirely abandoned the small orders and the minute style, as much as Michael Angelo had done in Italy, and showed a single order on a grander scale, and in a bolder style.

"In Spain, the first fine specimens of the cinquecento style were shown in the monastery of the Engrazia at Saragossa, and in the magnificent addition made by Charles V. to the Moorish palace of the ancient kings of Grenada.

"In Germany, at Heidelberg, the Elector Palatine, Otto Henry, also in 1550, made a splendid addition, in the cinquecento style, to the pointed part of the castle.

"In England, the cinquecento style (which should there rather be called that of the seventeenth century) only began to ripen full a century and a half after Brunelleschi, the first restorer of the antique in Italy, had begun, in 1420, his works at Santa Maria del Fiore. In the beginning of the sixteenth century, Bishop Fox still placed the six mortuary chests, imitative of ancient sarcophagi, and wrought in Italy, in Winchester cathedral, on a screen wholly in the pointed style, and in the same manner built his chantry. Wolsey, the ostentatious minister of Henry VIII., and Queen Elizabeth, during her long reign, still raised her palaces and villas in the Gothic style; while the details of the court of the Louvre were finishing, in 1752, by Jean Goujon, in a style nearly equal to the antique; and it was only after the accession of James I., in 1603, that the first examples of the cinquecento were shown at Oxford, in the five orders piled one above the other in the front of the public schools; and in Westminster Abbey, in the miserable monuments of Mary Queen of Scots, and of Elizabeth; all, in point of execution and taste, at an immeasurable distance from works of the same style in Italy.

"Inigo Jones was the first in England who, after having, in the banquetting-hall at Whitehall, still applied small orders one above the other, in St. Paul's, Covent Garden, gave the example of a single colossal order; an example too strictly followed by later architects in private houses, of different stories, though appropriate to the nature and magnitude of public edifices."

Chap. XLVII. *A List of Edifices in the Cinquecento Style.*
These are chiefly on the Continent; but the following are in England:—

"Front of the schools, Oxford; tombs of Mary and Elizabeth, Westminster Abbey; chapel of Bishop West in Ely cathedral; six mortuary chests placed by Bishop Fox on the screen round the choir of Winchester cathedral; front of Longleat, of Audley End, and many other private houses."

Chap. XLVIII. *Remarks upon Architecture, since the Time of Michael Angelo, in Europe.* The author concludes a rapid view of the corruption of the art in Italy and France, with the following remarks on the state of architecture in our own country : —

“ In England, government, by taxing alike heavily brick and stone, which form the solid walls, and the apertures from which they are absent for the admission of light, discourages in architecture both solidity of construction and variety of form ; copyhold tenures, short leases, and the custom of building whole streets by contract, still increase the slightness, the uniformity, the poverty of the general architecture. Here the exterior shell of most edifices is designed by a surveyor who has little science, and no knowledge of the fine arts ; and the internal finishing, regarded as distinct from the province of the architect, is left to a mere upholder, still more ignorant, who most frequently succeeds in the apparent object of marring the intentions of the builder. Thus has arisen, at least, that species of variety in building which proceeds from an entire and general ignorance of what is suitable and appropriate to the age, nation, and localities.

“ Some, still reviving the name of the antique, the classic, style, but only acquainted with its nature in public edifices, those which alone have in some degree survived the wreck of ages, by building houses in the shape of temples, have contrived for themselves most inappropriate and uncomfortable dwellings. Some, reverting to the pointed style, as more indigenous, more national, but, in England, where there are few private buildings to serve as models for it, taking all their ideas from religious edifices, instead of a temple, have lodged themselves in a church. Others have, in times of profound peace, or, at least, of internal security and refinement, affected to raise rude and embattled castles, as if they expected a siege. Others, again, wishing for more striking novelty, have sought their models among the ancient Egyptians, the Chinese, or the Moors ; or, by way of leaving no kind of beauty unattempted, have occasionally collected and knit together, as if they were the fragments of a universal chaos, portions of all these styles, without consideration of their original use and destination.

“ Finally, as if in utter despair, some have relapsed into an admiration of the old scroll-work, the old French style, of which the French had become ashamed, and which they had rejected, and greedily bought it up. Not content with ransacking every pawnbroker's shop in London and in Paris for old buhl, old porcelain, old plate, old tapestry, and old frames, they even set every manufacture at work, and corrupted the taste of every modern artist by the renovation of this wretched style.

“ No one seems yet to have conceived the smallest wish or idea of only borrowing of every former style of architecture whatever it might present of useful or ornamental, of scientific or tasteful ; of adding thereto whatever other new dispositions or forms might afford conveniences or elegancies not yet possessed ; of making the new discoveries, the new conquests, of natural productions unknown to former ages, the models of new imitations more beautiful and more varied ; and thus of composing an architecture which, born in our country, grown on our soil, and in harmony with our climate, institutions, and habits, at once elegant, appropriate, and original, should truly deserve the appellation of ‘ *Our Own*.’ ”

This review has extended through many pages, in more than one volume ; but the quotations are so intensely interesting, that we scarcely know any more valuable matter that we could have laid before our readers. We take this opportunity of again thanking the present Mr. Hope, for his kind permission to quote from his illustrious father's work to any extent that we might think advisable.

MISCELLANEOUS INTELLIGENCE.

ART. I. General Notices.

PAINTED Architecture.—It does sometimes happen that the man who looks into the hidden things of old time, and shows the living what is worthy of praise or blame in the works of the dead, becomes the jest of some minds, and is thought to live without doing aught for the world : but this cannot be, when, by the study of antiquities, whether it be the arts of a nation, her policy, religion, or laws, we lay hold of a clue which guides us through so many mazes in the vast labyrinth of learning ; are able to scan the dark ways of the past, over which there hung such a veil of obscurity, and acquaint ourselves with what man has achieved, from his first feeble beginnings, to the most polished stages of society. Much might be said on this topic ; but I will hasten to give what I have collected on the subject of painted architecture ; one which has only within the last few years occupied the attention of antiquaries.

We know, to some extent, the principles which guided the architects of the middle ages in embellishing by colour their religious and civil edifices ; but this branch of the art opens a wide field, which might at first sight seem rude, and full of dull weeds, but which, in reality, is far from being so.

—“ Not harsh and rugged are the ways
Of hoar antiquity, but strewn with flowers.” *Jos. Warton.*

Little has been said of the manner in which the Persian, Hindû, and Arabian architecture was adorned ; though we know that, not only by the help of colours, but with mosaics, and various stones of great value, many Arabian buildings outvie in splendour the most sumptuous churches in Italy. (See Murphy's *Arabian Antiq. of Spain*, fol. Lond. 1813 ; and Moor's *Hindu Pantheon* ; nor would I forget Goury and Owen Jones's truly splendid work on the Alhambra, illustrating that specimen of Moorish architecture, which is now appearing in Numbers.) Little has been done until lately* towards setting before us, in a clear light, the system which was followed by the Egyptians of old in painting their works of architecture and sculpture ; for we are informed by Norden and other travellers that the hieroglyphics on the outside of their temples were painted in various colours. There thus cannot be much doubt that the polychromic art had its origin with this people ; and what most of all astonishes us is, that, even in our own days, the colours in some ancient paintings should be as fresh as they were when first applied. I may cite the paintings on the tombs of the Theban kings (spoken of by Pococke in his *Observations on Egypt*, p. 98.) ; which, though they may probably be referred to the time of Moses, yet still show their first colours ; but most authors agree that they had been burned into the stone or substance upon which they were laid. (See a paper “ On the Durability of Colours in ancient Painting,” *Gent. Mag.*, 1784, vol. liv.) One who lately saw Belzoni's tomb at Thebes tells me that he was struck with the brilliancy of the colours there, but, above all, with the blue (like the oriently intense blue of the Chinese), which is met with in many of the buildings in Egypt, and which, he thinks, is not to be matched in England. But Sir H. Davy produced a fine deep sky blue, which was considered equal in tint to the Egyptian azure, although it had not the same degree of fusibility (see art. Paints, in Ure's *Dictionary of Chemistry*) ; and many useful facts were ascertained from the trials which Sir H. Davy made on the paintings in the Baths of Titus, and those dug up in Pompeii.

I will not now say anything more touching Egyptian painting ; but, on the polychromy of architecture in the middle ages, I would add what I have gleaned relating to two subjects which were often drawn by our forefathers

* From Wilkinson's *Materia Hieroglyphica*, and his new work on the *Manners and Customs of the Ancient Egyptians*, the reader will learn what was the process with the Egyptian artists in their paintings and sculpture ; and there is much besides with which the young architect should be conversant.

on the walls of their sacred edifices, because they were forgotten in my former paper, and may be of some use or interest to such as are curious this way.

There are but few who have never read of or heard the story of *St. George and the Dragon*. It has powerfully worked not only upon the minds of the credulous, but many a place has been chosen for making known that grand event. As one of the Seven Champions of Christendom, and the patron of England, the name of St. George is revered all over the East, but especially by the Greeks; and Robinson, in his *Travels in Palestine and Syria*, says that there was scarcely a Greek church he visited, but what had a picture representing him fighting with the dragon; and, that no mistake might be made, the words "Ἅγιος Γεώργιος (St. George) were always to be found written in the corner.

About five years ago, there was discovered a fresco painting of St. George and the Dragon, of the time of Henry VII., in the church of the Holy Trinity at Dartford, of which an engraving and description were given in the *Gentleman's Magazine* for Aug., 1836. A similar one was also found at the church of the Holy Cross at Stratford on Avon, among other paintings in fresco, which were drawn and coloured by Fisher (fol. Lond. 1807); and have again been recently published. A representation of this legend is carved, also, on an oak chest in York Cathedral, which has been etched in Carter's *Ancient Sculpture and Painting*, and is published in Walpole's *Anecdotes of Painting*.

We know how much the pencil borrowed its theme, in days of yore, either from allegory, or history, or legend; and I will now speak of one historical piece, which was common in churches and chapels.

The painting of the murder of Thomas à Becket, which saw light again about eight days ago in Preston Church, described in vol. xxiii. of the *Archæologia*, was, as the author there states, one of the earliest of this kind. It is stained on glass in the parish church of Brereton, in Cheshire (*Archæologia*, vol. x. p. 51.); and in the window of the north aisle of Christ Church, Oxford. It is painted in fresco in Canterbury Cathedral, and in the church of the Holy Cross at Stratford on Avon; and sculptured in low relief in marble, once the altar-piece in Beauchief Abbey. It is rather remarkable, but most of these representations are alike as to the arrangement and attitude of the figures.—*Frederick Lush*. 1838.

Duty on Bricks.—"I wish you would stir up architects to get the duty off bricks: even the double duty taken off would be a boon in favour of the extension of taste. A meeting should be got up in London, to draw up a petition to Parliament, which would soon be followed by the rest of the kingdom. In fact, there should be a regular agitation. I have seen the Marquess of Tweeddale's 'brick-maker,' and think highly of it.—*W. Thorold*. *Norwich*, Oct. 15. 1838.

ART. II. Domestic Notices.

ENGLAND.

BUILDINGS in unhealthy Situations.—Those who have studied the nature of soils and situations, with reference to their influence on health, cannot but feel surprised at the building projects which are occasionally made public by architects and building speculators. It would be uncharitable to suppose that these architects and builders are fully aware of the danger, as regards health, of living in such situations as those which they propose to cover with human habitations; and it is clear that the great body of house-renters know very little of what is best for them, in point of situation and soil, or speculative builders would never risk their property in covering such situations with masses of buildings. We have been led to these remarks from having seen a lithographed plan for covering a piece of ground, of about sixty acres, we believe, in extent, between Notting Hill, and Shepherd's Bush, with streets, squares, and crescents, of what we suppose will be reckoned second and third-rate houses. The soil is a strong clay; the

situation, for the greater part, quite flat ; and the whole is so moist, that, three or four years ago, when this ground was proposed to be turned into a cemetery, the wetness of the soil, and the want of drainage, were found to be insuperable objections. But, even supposing that there were sufficient drainage, the lowness of the situation, and the retentive nature of the soil, are such as to render the piece of ground altogether unfit for the erection of human habitations, in our present state of civilisation, and comparative delicacy of constitution. We have no hesitation in saying, that there is not a spot in the whole of this sixty acres, on which we should willingly set ourselves down, even if we had the ground and the house rent free. A respectable builder, we are told, being asked to take a portion of the ground, honestly replied, that he would never undertake to build a house in which he would not be willing to live himself, if necessary. Unfortunately, few architects or builders ever think at all of the healthiness or unhealthiness of the situation of the houses they are employed to build. All they think of is, to make a convenient plan, and to design a handsome elevation ; while the object of the proprietor is, to increase the value of his land, by covering it with houses. The tenant, allured by a showy exterior, thinks as little of the subject as the proprietor and architect have done, and only finds out his danger when it is too late to save himself without considerable pecuniary loss. What, then, is to be done to secure the public against buildings placed in unhealthy situations ? Are we to have a metropolitan board or commission ; or some public officer appointed to superintend these things ? Or, should a survey be made, by order of government, of the suburbs of the metropolis, and of all large towns, and those places pointed out on a map which are fit for building, and also those which are unfit ? Something, no doubt, might be done by having a commission, or a public officer, to refer to ; but the grand remedy for every evil of this kind is, as it is for most others, the spread of knowledge ; and, in this case, the general enlightenment of the public, with regard to the requisites for insuring health, is the kind of knowledge wanting. This can only be acquired effectually in youth ; and the time will, no doubt, come, when it will be made a part of every one's education. In the meantime, the public must suffer, and gain knowledge by experience ; unless they should be so fortunate as to meet with such books as *Coombe's Constitution of Man*, *Clarke on Climate*, *McCulloch on Malaria*, and others, which treat expressly of the healthiness and unhealthiness of soils and situations. — *Cont.*

Building on the Royal Kitchen-Garden, Kensington Gravel Pits. — We have been for many years attempting to get the hideous north wall of this kitchen-garden taken down, as a great public nuisance, and an open iron fence put up in its stead, at some yards' distance from the public road ; proposing the garden itself to be laid down in grass, and joined to the public pleasure-ground adjoining the palace. We now learn, with deep regret, that the greater part of the kitchen-garden is let for building on. Unquestionably, it is a most eligible site for that purpose ; but the loss of so much open space to the public is one which it will require more than a century to recover. The kitchen-garden has been of no manner of use, as such, for many years ; but the area which it occupies would have made a noble addition to the pleasure-ground ; and, by a few purchases, and a little arrangement, the gardens, or, at all events, public gardens, might have been extended as far as Holland House ; and, when that property came to be sold, it might have been added. Thus, a public garden would have been formed, which would have commenced at the west end of Pall Mall, and been continued to the west boundary of Lord Holland's park. The public road from Kensington Gravel Pits to Kensington, which now passes over a hill, would, in the event of such an arrangement taking place, be removed into the hollow, and pass through the grounds now occupied by Dr. Lang ; over which hollow a viaduct might be thrown, to connect what is now the Royal Kitchen-garden with the grounds along the ridge of Camden Hill. These grounds, for such a breadth as might be conveniently purchased, if laid down in grass, would connect the viaduct

with Lord Holland's park, and complete the chain of pleasure-ground contemplated. It will not be denied, we think, that such an addition to Kensington Gardens would be a great public improvement; but, if the kitchen-garden is let for building on, it is one which cannot be made for generations to come. Our only hope is, that the report we have heard is not true. — *Cond.*

Supplying St. Pancras with Water from Artesian Wells. — We have been much surprised to see by the newspapers that this subject has been seriously thought of, and discussed in meetings at which some persons were present eminent for scientific knowledge. We thought it had been generally known that the sources which supply the London basin, ample as they are, are still limited. As a practical proof of this, it is only necessary to mention that the two great breweries which draw their supplies from wells which penetrate to the chalk, the one on the Middlesex, and the other on the Surrey side of the river, cannot both pump on the same day, and, by agreement, pump on different days. If a part of the Thames water above Richmond, where it is tolerably pure, could, by means of a deep shaft, be made to run into the basin, then, no doubt, the whole of London might be supplied from it, cheaper than is now done by surface-pipes. But, supposing this mode to be adopted, it would only prove sufficient for a century or two; for such would be the quantity of sand and mud carried down by the water of the Thames, that, unless it were filtered before it entered the shaft, it would, in time, solidify the under stratum. Among all the plans that have been devised for supplying London with water, we have no doubt whatever that the present mode by surface-pipes is the best, provided the water be drawn from pure sources. By being brought in in pipes covered by earth, the water is delivered at a lower temperature in summer, and a higher temperature in winter, and free from all those impurities to which an open watercourse is liable: witness, for example, the New River. How to induce the public companies to supply water at moderate rates, is a different question. Perhaps the real object of the St. Pancras meeting was to hold the Artesian system *in terrorem* over the advocates of the surface system, in order to keep the water companies within bounds. — *Cond.*

BERKSHIRE. — *Reading.* — *A Statue of the late Rev. R. Valpy*, which Mr. Nixon has now in hand, is intended to be erected to his memory in the church of St. Lawrence, Reading, in a niche in the belfry of the tower. His scholars have paid this tribute of respect for his abilities, both as an author and a minister; of whom, I believe, Mr. Serjeant Talfourd was the first and foremost. The part that most strikes us in the statue is the position of the right hand, that is raised *, and imparts expression; but the whole has great repose, and there is a grace and simplicity in the folds of the drapery, which are admirable. — *Frederick Lush, Oct., 1838.*

DEVONSHIRE. — *Thickness of Metal on Macadamised Roads.* — At a meeting of the trustees of certain roads in this county, a very interesting document was presented; viz.,

The Surveyor's Report as to the Strength of the Roads of the Trust, ascertained

* Valpy had a habit, it is supposed by those who knew him intimately, of tracing, after the death of his wife, her initials, with the fore finger of his right hand. This trait seems to have been transferred, in some degree, to the stone. It is the principal business of sculpture to draw the likenesses, and present us with a true portraiture, of men; to copy the attitudes of their actions; to paint the passions their flesh is heir to; and to show us, as much as possible, the appearance they made when living, both in their lives and dress; in short, to represent them as they are. Hence, the pig-tail of George III. ought not to be censured, if he wore one, which he did; but the Roman costume of our James II., behind the banqueting-house, Whitehall, although executed so well, and so much admired, is yet faulty, under this criterion; for we see him not as he was, and *imitation* has failed. [Dr. Waagen expresses a very different opinion. See *Edinburgh Review* for July, 1838, p. 399.]

by *Pitting*. This was presented by Mr. Jas. Howard, surveyor to the trust, every thing being particularised and set forth; and it was justly deemed a most important document. Mr. Howard said: "In presenting my detailed statement containing the particulars of the strength and width of the whole of the roads of the trust, I think it also desirable to lay before you, in a condensed and more comprehensive character, the average result of these operations, calculated upon depths taken at four transverse pittings, at specified distances over each line of road. On parts of the London, Crediton, Chudleigh or Plymouth, Okehampton, and Exmouth roads, leading for short distances out of Exeter, it was considered expedient to take the strengths at distances of one furlong: the remaining portions of these roads have been pitted at every quarter of a mile. The following particulars show the average results on the above five roads.

Crediton Road. Exeter to near Cowley Bridge, at every furlong, $2\frac{1}{4}$ in. deep; width of road stoned, 21 ft. 4 in. From near Cowley Bridge to 9-mile stone, at every quarter mile, $1\frac{1}{2}$ in. deep; width of road stoned, 20 ft. The average of the above two pieces of road would, therefore, be $1\frac{3}{4}$ in.

London Road. First two miles, at every furlong, $1\frac{1}{8}$ in. deep; width of road stoned, 23 ft. 9 in. The remainder of this road, to Streetway Head, at every quarter mile, $1\frac{1}{2}$ in. deep; width of road, 22 ft. 6 in. The average depth of this last road would be about $1\frac{1}{4}$ in.

Exmouth Road. First two miles, at every furlong, $1\frac{1}{8}$ in. deep; width of road stoned, 22 ft. The remainder of this road, to Burnt House, at every quarter mile, $2\frac{1}{8}$ in. deep; width of road stoned, 16 ft. Average result, $1\frac{5}{8}$ in.

Chudleigh or Plymouth Road. First mile, at every furlong, three quarters of an inch deep; width of road stoned, 21 ft. 4 in. The remainder, to Chudleigh Bridge, at every quarter mile, $1\frac{1}{2}$ in. deep; width of road, 23 ft. Average depth of the two pieces, $1\frac{1}{8}$ in.

Okehampton Road. To Pocombe Bridge, at every furlong, $1\frac{3}{8}$ in. deep; width of road stoned, 22 ft. From thence to Crockernwell, at every quarter mile, $3\frac{1}{8}$ in. deep; width of road, 21 ft. Average depth of Okehampton road, $2\frac{1}{4}$ in.

The averages of the remainder of the roads, as calculated upon pittings taken at the distance of a quarter of a mile each (except the New North Entrance, which was taken at furlong distances), are shown as follows:—

		Av. depth. Inches.	Av. width. Ft. In.			Av. depth. Inches.	Av. width. Ft. In.
Barum Cross	-	$1\frac{3}{4}$	13 6	Magdalen	-	2	17 0
Bath	-	$2\frac{1}{8}$	20 6	Moor Lane	-	$1\frac{3}{4}$	16 0
Blue Ball	-	$1\frac{1}{2}$	19 0	Newton Bushel	-	$1\frac{1}{4}$	19 0
Bow	-	$1\frac{3}{4}$	15 6	Pin Lane	-	$1\frac{3}{8}$	16 0
Bradinch	-	$1\frac{3}{8}$	15 9	Raddon Cross	-	$\frac{3}{4}$	13 0
Coplestone	-	$1\frac{1}{4}$	16 0	Shillingford	-	$\frac{1}{8}$	17 6
Craniver	-	$1\frac{1}{2}$	15 6	Sidmouth	-	$1\frac{7}{8}$	17 0
New North Entrance	-	2	25 1	Stoke (Old)	-	1	20 0
Drayford	-	$1\frac{1}{4}$	13 0	Tiverton (by Cowley Bridge)	-	$2\frac{1}{8}$	19 9
Dunchideock	-	1	15 9	Upton Pyne	-	$\frac{3}{4}$	15 0
Dunsford	-	2	18 0	Whitstone	-	1	19 0
Eggesford	-	2	18 0	Woodbury	-	$1\frac{1}{2}$	15 0
Exwick	-	$1\frac{1}{4}$	16 1	Okehampton Street	-	$2\frac{1}{2}$	
Exminster	-	$1\frac{1}{8}$	19 6				

(*North Devon Journal*, June 21. 1838.)

DORSETSHIRE. — *Shaftesbury*. — A *Union Workhouse* is now in progress on Enmore Green, at the bottom of Castle Hill, an eminence west of the town. They have four churches here now remaining, respectively dedicated to *St. Peter's*, the *Holy Trinity*, *St. James*, and *Cann Church* alias *St. Rumbald*; the latter of which will, no doubt, shortly be rebuilt. Trinity church is too

far gone on the road to decay, to admit of reparation ; but there has been some talk of rebuilding it, if sufficient funds can be raised for the purpose.

At *Charlton*, a *Chapel of Ease* is now building, which, in a hamlet like this, cannot fail to win our admiration ; because there is a simplicity about it which is the result of fitness, as well as a source of the beautiful. To give an idea of the design, the windows and doors are circular-headed, having round them a recess or sinking of about 4 in., making piers accordingly ; these stop where the sinking finishes, about 2 ft. 6 in. below the windows ; so that they serve, not only as a kind of set-off to the building, but give relief to the walls and the marked stories of the two towers. The soffit of every sinking has plain brackets under. There is a gallery at the west end. The chapel is built of stone, and the estimate is about 1,500*l.* — *Frederick Lush. Sept., 1838.*

Gillingham. — The old church, dedicated to the *Virgin Mary*, was, except the chancel, razed to its very foundation last February, and the building begun with anew on the following June. Its plan is in the form of a cross ; and the architecture looks somewhat of a piece with the fine old Gothic work of the chancel, that still remains.* The tower will be carried up 84 ft. high, which exceeds the former one, that stood 63 ft. high. We learn from *Hutchin's History and Antiquities of Dorsetshire*, vol. iii. p. 214., that on the wall of the belfry there were inscribed these words : — “ The porch new built, the lead new cast ; the church, the vestry, repaired ; 1617. The tower raised 21 ft., the dial, ringing-loft, and king's arms, made by the gift of several, A. D. 1618.” — *Frederick Lush. Sept., 1838.*

NORTHUMBERLAND. — *Newcastle.* — *Timber Viaducts.* At the meeting of the British Association, Sept. 8., a paper was read, “ On the Construction of Timber Viaducts,” by B. Green. The timber viaducts constructed by Mr. Green, on several lines of railway, consist of arches on stone piers. These arches consist of three ribs, and every rib is put together with three-inch thick deals, in length of from 20 ft. to 45 ft., and two of the deals in width. The first course is composed of two whole deals in width, and the next of one whole and two half deals, and so on alternately, until the rib is formed. Each rib consists of sixteen deals in height or thickness, their ends making joints, so that no two of the horizontal or radiating joints shall come together. The three ribs are connected together by diagonal braces and iron bolts ; the spandrils are strutted in a peculiar manner ; the whole of the timber was subjected to Kyan's process ; and between every deal is a layer of brown paper dipped in tar.

Arches of laminated Plates of Iron. The same principle of constructing arches of iron by laminated plates, has been adopted by Mr. Green. Wrought-iron bars, from 1½ in. to 4 in. square (according to the span of the arch), from 15 ft. to 25 ft. long, grooved on the under, and tongued on the upper, side, are laid one over the other, and bent over a centre, until the rib is formed. The iron bars are bound together at intervals of from 4 ft. to 6 ft. apart, with iron straps and keys round the rib. The spandrils are fitted with iron struts. A considerable saving of expense, and great lightness, as compared with

* There are powerful reasons for not laying aside, but adopting, as far as we are able, the usual accompaniments of our *sacred edifices*, such as the smoothly tapering *spire*, which, when we gaze upon its base, so beautifully and wonderfully poised, and view it lessening as it stretches towards the top, “ lifts our soul above this sphere of earthliness.” Then, too, the majestic *tower*, sure, and steadfast, and strong, as the faith of *those* who were, as Stowe says, “ the pillars of the church ; ” besides the *cross*, that with all the deep-striking power of association, brings our lot and fretted state of being before us. To preserve in our churches (and those which at this time are so fast springing up) these and other distinguished characteristics, or emblematic ornaments, is consonant, not only with every sense of propriety, but with all that feeling of veneration for whatever has been hallowed by time.

stone or ordinary iron bridges, may thus be attained. (*Athenæum*, Sept. 15. 1838, p. 682.)

SOMERSETSHIRE. — *Clifton*. — *Enlargement of the Village*. *Brunei's Suspension Bridge*. There is, both in the village and out of it, enough going on to show that the building art does not lie idle. There is an evident growth of houses, which, like most of their predecessors, are very superior to the dingy-looking brick fronts in London, which almost stare us out of countenance. They approach more to the first-rate houses in Regent's Park, or in the city of Bath. Indeed, it has been said (*Beauties of England and Wales*) that the Upper Crescents, particularly the terrace of the largest (which, together, form so conspicuous a feature), can hardly be rivalled by any street in England. But from the village let us stroll to the Downs. Here is a series of villas just completed, in the plain Athenian style of architecture; and the grounds too, adjoining, are laid out in a tasteful manner. Not far from this spot, we may see the fruits of all-conquering genius, although they are not yet brought to maturity; we may see how mankind have reached "the highest heaven of invention;" where all around is quiet and solitudinous, but where is here heard the hum of men from the factory at the foot of Leigh Wood, whence the awakening sound goes forth; and it is deeply interesting to watch an immense weight of material for the masonry of the buttment of the suspension bridge, travelling up an inclined plane that descends from the summit of the rocks, full 800 ft. high.* And what a proud memorial of skill, when the iron that has come under the giant grasp of the steam-arm is made subservient to ends so beautiful and so useful! What feelings of admiration and delight will be raised in the breast of the beholder, when he surveys a safe way for millions or more stretched from rock to rock high up in the air; beneath which vessels, with their sails spread to catch the breeze, float fearlessly and swiftly for the good of his fellow-creatures! How grand, how imposing, it will be, to see one of the greatest triumphs of art achieved and wrought into those bold and lofty rocks, which have been formed by the hand of Nature, and founded upon an immovable basis! — *Frederick Lush*. Oct., 1838.

ART. III. *Retrospective Criticism*.

PLANTING Churchyards. (p. 352.) — I like your paper on churchyards very much; but I wonder you have not noticed the weeping willow among your list of trees. In the churchyard which I think the most unaffected and beautiful in Britain, that of Peterborough Cathedral, which, in everything but situation and abstract beauty of sculpture, exceeds Père la Chaise, the pale green of the weeping willow is exquisitely used among the darker tints. — *Kata Phusin*.

Our reason for excluding the weeping willow is, that the idea of it is generally associated with that of moist soil, or of water, neither of which is suitable for churchyards; to this may be added, that it is a short-lived tree; and all churchyard trees, we think, ought to be durable. There is a beautiful species of evergreen, called *Thûja pëndula*, figured in our *Arboretum*, vol. iv. p. 2461., and of which there is a specimen in the arboretum at Kew, which, when once propagated by nurserymen, will form an admirable tree for churchyards. Its longevity is as great as that of the yew: it does not seem to grow higher than 18 or 20 feet; and the filiform spray descends from the points of the branches to the ground, almost perpendicularly. — *Cond*.

* See short account of works at Clifton Bridge, *Arch. Mag.*, vol. iii. p. 533.

THE ARCHITECTURAL MAGAZINE.

JANUARY, 1839.

ORIGINAL COMMUNICATIONS.

ART. I. *Whether Works of Art may, with Propriety, be combined with the Sublimity of Nature ; and what would be the most appropriate Situation for the proposed Monument to the Memory of Sir Walter Scott, in Edinburgh ?* By KATA PHUSIN.

THE question which has been brought before the readers of the *Architectural Magazine* by W. is one of peculiar and excessive interest; one in which no individual has any right to advance an opinion, properly so called, the mere result of his own private habits of feeling; but which should be subjected, as far as possible, to a fixed and undoubted criterion, deduced from demonstrable principles and indisputable laws. Therefore, as we have been referred to, we shall endeavour, in as short a space as possible, to bring to bear upon the question those principles whose truth is either distinctly demonstrable, or generally allowed.

The question resolves into two branches. First, whether works of art, may with propriety, be combined with the sublimity of nature. This is a point which is discussable by every one. And, secondly, what will be the most appropriate locality for the monument to Scott at Edinburgh. And this we think may be assumed to be a question interesting to, and discussable by, one third of the educated population of Great Britain: as that proportion is, in all probability, acquainted with the ups and downs of "Auld Reekie."

For the first branch of the question, we have to confess ourselves altogether unable to conjecture what the editor of the *Courant* means by the phrase "works of art," in the paragraph at page 500. Its full signification embraces all the larger creations of the architect, but it cannot be meant to convey such a meaning here, or the proposition is purer nonsense than we ever encountered in print. Yet, in the very next sentence, our editor calls Nelson's Pillar a work of art, which is certainly a very original idea of his; one which might give rise to curious conjectures relative to the acceptation of the word "art" in Scotland, which here would seem to be a condensed expression for "l'art de se faire ridicule." However, as far as we can judge from the general force of the paragraph, he seems to mean only those works

of art which are intended to convey a certain lesson, or impression, to the mind, which impression can only be consequent upon the full examination of their details, and which is therefore always wanting when they are contemplated from a distance ; so that they become meaningless in a piece of general effect.* All monuments come under this class of works of art, and to them alone, as being in the present case the chief objects of investigation, our remarks shall be confined.

Monuments are referable to two distinct classes: those which are intended to recall the memory of life, properly called monuments; and those which are intended to induce veneration of death, properly called shrines or sepulchres. To the first we intrust the glory, to the second the ashes, of the dead. The monument and the shrine are sometimes combined, but almost invariably, with bad effect; for the very simple reason, that the honour of the monument rejoices; the honour of the sepulchre mourns. When the two feelings come together, they neutralise each other, and, therefore, should neither be expressed. Their unity, however, is, when thus unexpressed, exquisitely beautiful. In the floor of the church of St. Jean and Paul at Venice, there is a flat square slab of marble, on which is the word "Titianus." This is at once the monument and the shrine; and the pilgrims of all nations who pass by feel that both are efficient, when their hearts burn within them as they turn to avoid treading on the stone.

But, whenever art is introduced in either the shrine or the monument, they should be left separate. For, again, the place of his repose is often selected by the individual himself, or by those who loved him, under the influence of feelings altogether unconnected with the rushing glory of his past existence. The grave must always have a home feeling about its peace; it should have little connexion with the various turbulence which has passed by for ever; it should be the dwelling-place and the bourne of the affections, rather than of the intellect, of the living; for the thought and the reason cannot cling to the dust, though the weak presence of involuntary passion fold its wings for ever where its object went down into darkness. That presence is always to a certain degree meaningless; that is, it is a mere clinging of the human soul to the wrecks of its delight, without any definite indication of purpose or reflection: or, if the lingering near the ashes be an act ennobled by the higher thoughts of religion, those thoughts are common to all mourners. Claimed by all the dead, they need not be expressed, for they are not exclusively our own; and, therefore, we find that these affections most commonly

* For instance, the obelisk on the top of Whitaw, mentioned at p. 502., is seen all the way to Carlisle; and, as nobody but the initiated can be aware of its signification, it looks like an insane lamp post in search of the picturesque.

manifest themselves merely by lavishing decoration upon the piece of architecture; which protects the grave from profanation and the sepulchre assumes a general form of beauty, in whose rich decoration we perceive veneration for the dead, but nothing more, no variety of expression or feeling. Priest and layman lie with their lifted hands in semblance of the same repose; and the gorgeous canopies above, while they address the universal feelings, tell no tale to the intellect. But the case is different with the monument; there we are addressing the intellectual powers, the memory and imagination; every thing should have a peculiar forcible meaning, and architecture alone is thoroughly insipid, even in combination often absurd. The situation of the memorial has now become part and parcel of its expressive power, and we can no longer allow it to be determined by the affections: it must be judged of by a higher and more certain criterion. That criterion we shall endeavour to arrive at, observing, *en passant*, that the proceeding of the committee, in requiring architects to furnish them with a design without knowing the situation, is about as reasonable as requiring them to determine two unknown quantities from one equation. If they want the "ready made" style, they had better go to the first stonemason's, and select a superfine marble slab, with "Affliction sore long time he bore, Physicians was in vain," &c., ready cut thereon. We could hardly have imagined that any body of men could have possessed so extraordinarily minute a sum total of sense.

But to the point. The effect of all works of art is twofold; on the mind and on the eye. First, we have to determine how the situation is to be chosen, with relation to the effect on the mind. The respect which we entertain for any individual depends in a greater degree upon our sympathy with the pervading energy of his character, than upon our admiration of the mode in which that energy manifests itself. That is, the fixed degree of intellectual power being granted, the degree of respect which we pay to its particular manifestation depends upon our sympathy with the cause which directed that manifestation. Thus, every one will grant that it is a noble thing to win successive battles; yet no one ever admired Napoleon, who was not ambitious. So, again, the more we love our country, the more we admire Leonidas. This, which is our natural and involuntary mode of estimating excellence, is partly just and partly unjust. It is just, because we look to the motive rather than to the action; it is unjust, because we admire only those motives from which we feel that we ourselves act, or desire to act: yet, just or unjust, it is the mode which we always employ; and, therefore, when we wish to excite admiration of any given character, it is not enough to point to his actions or his writings, we must indicate as far as

possible the nature of the ruling spirit which induced the deed, or pervaded the meditation. Now, this can never be done directly; neither inscription nor allegory is sufficient to inform the feelings of that which would most affect them; the latter, indeed, is a dangerous and doubtful expedient in all cases: but it can frequently be done indirectly, by pointing to the great first cause, to the nursing mother, so to speak, of the ruling spirit whose presence we would indicate; and by directing the attention of the spectator to those objects which were its guides and modifiers, which became to it the objects of one or both of the universal and only moving influences of life, hope or love; which excited and fostered within it that feeling which is the essence and glory of all noble minds, indefinable except in the words of one who felt it above many.

“ The desire of the moth for the star,
Of the night for the morrow;
The devotion to something afar
From the sphere of our sorrow.”

Now, it is almost always in the power of the monument to indicate this first cause by its situation; for that cause must have been something in human, or in inanimate, nature.* We can therefore always select a spot where that part of human or inanimate nature is most peculiarly manifested, and we should always do this in preference to selecting any scenes of celebrated passages in the individual's life; for those scenes are in themselves the best monuments, and are injured by every addition. Let us observe a few examples. The monument to the Swiss who fell at Paris, defending the king, in 1790, is *not* in the halls of the Tuileries, which they fortified with their bodies; but it is in the very heart of the land in which their faithfulness was taught and cherished, and whose children they best approved themselves in death: it is cut out in their native crags, in the midst of their beloved mountains; the pure streams whose echo sounded in their ears for ever flow and slumber beside and beneath it; the glance of the purple glaciers, the light of the moving lakes, the folds of the crimson clouds, encompass, with the glory which was the nurse of their young spirits, and which gleamed in the darkness of their dying eyes, the shadowy and silent monument which is at once the emblem of their fidelity and the memorial of what it cost them.

Again, the chief monument to Napoleon is *not* on the crest of the Pennine Alps, nor by the tower of San Juliano, nor on the heights above which the sun rose on Austerlitz; for in all these

* If in divine nature, it is not a distinctive cause; it occasioned not the peculiarity of the individual's character, but an approximation to that general character whose attainment is perfection.

places it must have been *alone* : but it is in the centre of the city of his dominion ; in the midst of *men*, in the motion of multitudes, wherein the various and turbulent motives which guided his life are still working and moving and struggling through the mass of humanity ; he stands central to the restless kingdom and capital, looking down upon the nucleus of feeling and energy, upon the focus of all light, within the vast dependent dominion.

So, again, the tomb of Shelley, which, as I think, is his only *material* monument, is in the "slope of green access" whose inhabitants "have pitched in heaven's smile their camp of death," and which is in the very centre of the natural light and loveliness which were his inspiration and his life ; and he who stands beside the grey pyramid in the midst of the grave, the city, and the wilderness, looking abroad upon the unimaginable immeasurable glory of the heaven and the earth, can alone understand or appreciate the power and the beauty of that mind which here dwelt and hence departed. We have not space to show how the same principle is developed in the noble shrines of the Scaligers at Verona ; in the colossal statue of San Carlo Borromeo, above the Lago Maggiore ; and in the lonely tomb beside the mountain church of Arquà* : but we think enough has been said to show what we mean. Now, from this principle we deduce the grand primary rule : whenever the conduct or the writings of any individual have been directed or inspired by feelings regarding man, let his monument be among men ; whenever they have been directed or inspired by nature, let nature be intrusted with the monument.

Again, all monuments to individuals are, to a certain extent, triumphant ; therefore, they must not be placed where nature has no elevation of character ; except in a few rare cases. For instance, a monument to Isaac Walton would be best placed in a low green meadow, within sight of some secluded and humble village ; but, in general, elevation of character is required. Hence it appears, that, as far as the feeling of the thing is concerned, works of art should be often combined with the bold and beautiful scenery of nature. Where, for instance, we would ask of the editor of the *Courant*, would he place a monument to Virgil or to Salvator Rosa. We think his answer would be very

* We wish we could remember some instance of equal fitness in Britain, but we shrink from the task of investigation : for there rise up before our imagination a monotonous multitude of immortal gentlemen, in nightshirts and bare feet, looking violently ferocious ; with corresponding young ladies, looking as if they did not exactly know what to do with themselves, occupied in pushing laurel crowns as far down as they will go on the pericrania of the aforesaid gentlemen in nightshirts ; and other young ladies expressing their perfect satisfaction at the whole proceeding by blowing penny trumpets in the rear.

inconsistent with his general proposition. There are, indeed, a few circumstances, by which argument on the other side might be supported. For instance, in contemplating any memorial, we are apt to feel as if it were weak and inefficient, unless we have a sense of its publicity ; but this want is amply counterbalanced by a corresponding advantage : the public monument is perpetually desecrated by the familiarity of unfeeling spectators, and palls gradually upon the minds even of those who revere it, becoming less impressive with the repetition of its appeals ; the secluded monument is unprofaned by careless contemplation, is sought out by those for whom alone it was erected, and found where the mind is best prepared to listen to its language.

So much for the effect of monuments on the mind. We have next to determine their effect on the eye, which the editor is chiefly thinking of when he speaks of the “finish of art.” He is right so far, that graceful art will not unite with ungraceful nature, nor finished art with unfinished nature, if such a thing exists ; but, if the character of the art be well suited to that of the given scene, the highest richness and finish that man can bestow will harmonise most beautifully with the yet more abundant richness, the yet more exquisite finish, which nature can present. It is to be observed, however, that, in such combination, the art is not to be a perfect whole ; it is to be assisted by, as it is associated with, concomitant circumstances : for, in all cases of effect, that which does not increase destroys, and that which is not useful is intrusive. Now, all allegory must be perfect in itself, or it is absurd ; therefore, allegory cannot be combined with nature. This is one important and imperative rule.* Again, Nature is never mechanical in her arrangements ; she never allows two members of a composition exactly to correspond : accordingly, in every piece of art which is to combine, without gradations, with landscape, (as must always be the case in monuments,) we must not allow a multitude of similar members ; the design must be a dignified and simple whole. These two rules being observed, there is hardly any limit to the variety and beauty of effect which may be attained by the fit combination of art and nature. For instance, we have spoken already of the monument to the Swiss, as it affects the mind ; we may again adduce it, as a fine address to the eye. A tall crag of grey limestone rises in a hollow, behind the town of Lucerne ; it is surrounded with thick foliage of various and beautiful colour ; a small stream

* It is to be observed, however, that, if the surrounding features could be made a part of the allegory, their combination might be proper ; but this is impossible, if the allegorical images be false imaginations, for we cannot make truth a part of fiction : but, where the allegorical images are representations of truth, bearing a hidden signification, it is sometimes possible to make nature a part of the allegory, and then we have good effect, as in the case of the Lucerne Lion above mentioned.

falls gleaming through one of its fissures, and finds its way into a deep, clear, and quiet pool at its base, an everlasting mirror of the bit of bright sky above, that lightens between the dark spires of the uppermost pines. There is a deep and shadowy hollow at the base of the cliff, increased by the chisel of the sculptor; and in the darkness of its shade, cut in the living rock, lies a dying lion, with its foot on a shield bearing the fleur-de-lis, and a broken lance in its side. Now, let us imagine the same figure, placed as the editor of the *Courant* would place it, in the marketplace of the town, on a square pedestal just allowing room for its tail. Query, have we not lost a little of the expression? We could multiply instances of the same kind without number. The fountains of Italy, for instance, often break out among foliage and rock, in the most exquisite combinations, bearing upon their fonts lovely vestiges of ancient sculpture; and the rich road-side crosses and shrines of Germany have also noble effect: but, we think, enough has been said, to show that the utmost finish of art is not inappropriate among the nobler scenes of nature, especially where pensiveness is mixed with the pride of the monument, its beauty is altogether lost by its being placed in the noise and tumult of a city.

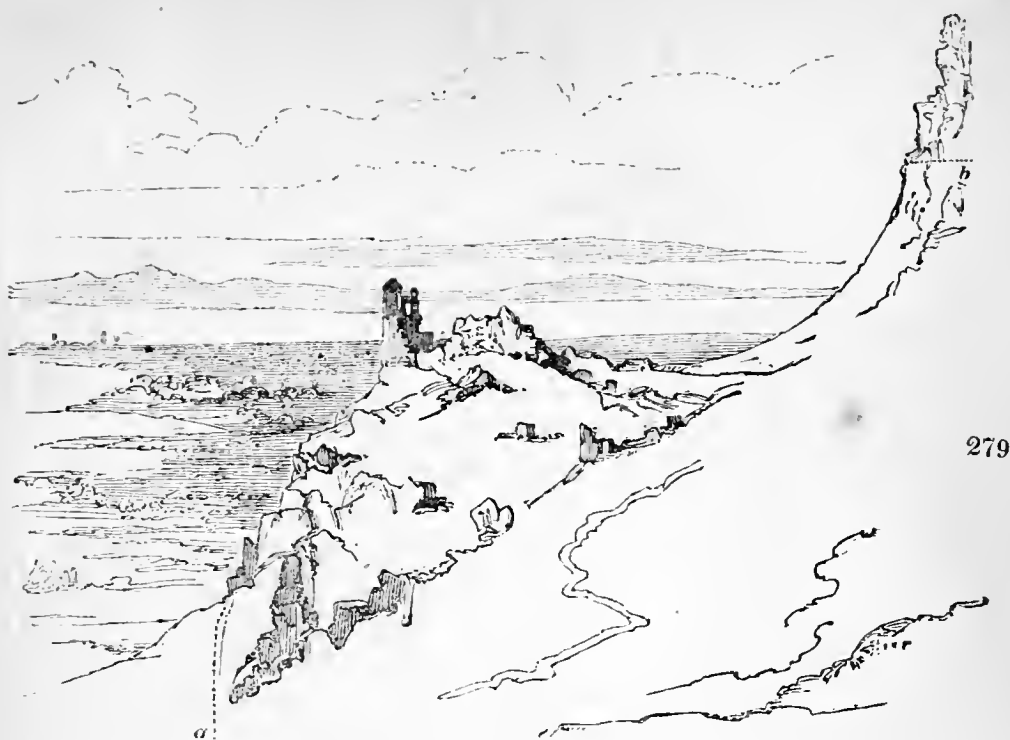
But it must be allowed, that, however beautiful the combination may be, when well managed, it requires far more taste and skill on the part of the designer, than the mere association of architecture, and therefore, from the want of such taste and skill, there is a far greater chance of our being offended by impropriety in the detached monument, than in that which is surrounded by architectural forms. And it is also to be observed, that monuments which are to form part of the sublimity as well as the beauty of a landscape, and to unite in general and large effects, require a strength of expression, a nobility of outline, and a simplicity of design, which very few architects or sculptors are capable of giving; and that, therefore, in such situations they are nine times out of ten injurious, not because there is anything necessarily improper in their position, but because there is much incongruity with the particular design.

So much for general principles. Now for the particular case. Edinburgh, at the first glance, appears to be a city presenting an infinite variety of aspect and association, and embarrassing rather by rivalry, than by paucity of advantage: but, on closer consideration, every spot of the city and its environs appears to be affected by some degrading influence, which neutralises every effect of actual or historical interest, and renders the investigation of the proper site for the monument in question about as difficult a problem as could well be proposed. Edinburgh is almost the only city we remember, which presents not a single point in which there is not something striking and even sublime; it is

also the only city which presents not a single point in which there is not something degrading and disgusting. Throughout its whole extent, wherever there is life there is filth, wherever there is cleanliness there is desolation. The new town is handsome from its command of the sea; but it is as stupid as Pompeii without its reminiscences. The old town is delicious in life and architecture and association, but it is one great open common sewer. The rocks of the castle are noble in themselves, but they guide the eye to barracks at the top and cauliflowers at the bottom; the Calton, though commanding a glorious group of city, mountain, and ocean, is suspended over the very jaws of perpetually active chimneys; and even Arthur's seat, though fine in form, and clean, which is saying a good deal, is a mere heap of black cinders, Vesuvius without its vigour or its vines. Nevertheless, as the monument *is* to be at Edinburgh, we must do the best we can. The first question is, Are we to have it in the city or the country? and, to decide this, we must determine which was Scott's ruling spirit, the love of nature or of man.

His descriptive pieces are universally allowed to be lively and characteristic, but not first rate; they have been far excelled by many writers, for the simple reason, that Scott, while he brings his landscape clearly before his reader's eyes, puts no soul into it, when he has done so; while other poets give a meaning and a humanity to every part of nature, which is to its loveliness what the breathing spirit is to the human countenance. We have not space for quotations, but any one may understand our meaning, who will compare Scott's description of the Dell of the Greta, in *Rokeby*, with the speech of Beatrice, beginning "But I remember, two miles on this side of the fort," in Act iii. Scene 1. of the *Cenci*; or who will take the trouble to compare carefully any piece he chooses of Scott's proudest description, with bits relating to similar scenery in Coleridge, or Shelley, or Byron (though the latter is not so first rate in description as in passion). Now, in his descriptions of some kinds of human nature, Scott has never been surpassed, and therefore it might at first appear that his influence of inspiration was in man. Not so; for, when such is the case, nationality has little power over the author, and he can usurp as he chooses the feelings of the inhabitants of every point of earth. Observe, for instance, how Shakspeare becomes a Venetian, or a Roman, or a Greek, or an Egyptian, and with equal facility. Not so Scott; his peculiar spirit was that of his native land; therefore, it related not to the whole essence of man, but to that part of his essence dependent on locality, and therefore, on nature.* The inspiration of Scott, therefore, was

* Observe, the ruling spirit may arise out of nature, and yet not limit the conception to a national character; but it never so limits the conception, unless it has risen out of nature.



derived from nature, and fed by mankind. Accordingly, his monument must be amidst natural scenery, yet within sight of the works and life of men.

This point being settled saves us a great deal of trouble, for we *must* go out towards Arthur's Seat, to get anything of country near Edinburgh, and thus our speculations are considerably limited at once. The site recommended by W. naturally occurs as conspicuous, but it has many disadvantages. In the first place, it is vain to hope that any new erection could exist, without utterly destroying the effect of the ruins. These are only beautiful from their situation, but that situation is particularly good. Seen from the west in particular (*fig. 279.*), the composition is extraordinarily scientific; the group beginning with the concave sweep on the right, rising up the broken crags which form the the summit, and give character to the mass; then the tower, which, had it been on the highest point, would have occasioned rigidity and formality, projecting from the flank of the mound, and yet keeping its rank as a primary object, by rising higher than the summit itself; finally, the bold, broad, and broken curve, sloping down to the basalt crags that support the whole, and forming the large branch of the great ogee curve (*fig. 280.*), from *a* to *b*. Now, we defy the best architect in the world, to add anything to this bit of composition, and not to spoil it.

280

Again, W. says, first, that the monument "could be placed so as to appear quite distinct and unconnected" with the ruins; and, a few lines below, he says, that its effect will be "taken in con-

nexion with the ruins." Now, though Charles Lamb says that second thoughts are *not* best, with W. they very certainly are; the effect would, without doubt, be taken in very close connexion with the ruins, rather too close, indeed, for the comfort of either monument: both would be utterly spoiled. Nothing in the way of elevated architecture will harmonise with ruin, but ruin: evidence of present humble life, a cottage or pigsty, for instance, built up against the old wall, is often excellent by way of contrast, but the addition or association of high architecture is total destruction.

But suppose we were to throw the old chapel down, would the site be fit for Scott. Not by any means. It is conspicuous certainly, but only conspicuous to the London road, and the Leith glass-houses. It is visible certainly from the Calton and the Castle: but, from the first, barely distinguishable from the huge, black, overwhelming cliff behind; and, from the second, the glimpse of it is slight and unimportant, for it merely peeps out from behind the rise to Salisbury Crags, and the bold mound on which it stands is altogether concealed; while, from St. Leonard's and the south approaches, it is quite invisible. Then for the site itself, it is a piece of perfect desolation; a lonely crag of broken basalt, covered with black debris, which have fallen from time to time from the cliffs above, and lie in massive and weedy confusion along the flanks and brow of the hill, presenting to the near spectator the porous hollows, and scoriaceous lichenless surface, which he scarcely dares to tread on, lest he should find it yet scorching from its creative fires. This is, indeed, a scene well adapted for the grey and shattered ruins, but altogether unfit for the pale colours and proportioned form of any modern monument.

Lastly, supposing that even the actual site were well chosen, the huge and shapeless cliff immediately above would crush almost any mass of good proportion. The ruins themselves provoke no comparison, for they do not pretend to size, but any colossal figure or column, or any fully proportioned architectural form, would be either crushed by the cliff, or would be totally out of proportion with the mound on which it would stand.

These considerations are sufficient to show that the site of St. Anthony's Chapel is not a good one; but W. may prove, on the other hand, that it is difficult to find a better. Were there any such lonely dingle scenery here as that of Hawthornden, or any running water of any kind near, something might be done; but the sculptor must be bold indeed, who dares to deal with bare turf and black basalt. The only idea which strikes us as in the least degree tolerable is this; where the range of Salisbury Crags gets low and broken, towards the north, at about the point of equal elevation with St. Anthony's Chapel, let a bold and solid

mass of mason-work be built out from the cliff, in *grey* stone, broken like natural rock, rising some four or five feet above the brow of the crag, and sloping down, not too steeply, into the bank below. This must be built fairly *into* the cliff to allow for disintegration. At the foot of this, let a group of figures, not more than five in number, be carved in the solid rock, in the dress of Border shepherds, with the plaid and bonnet (a good costume for the sculptor), in easy attitudes; sleeping perhaps, reclining at any rate. On the brow of this pedestal, let a colossal figure of Scott be placed, with the arms folded, looking towards the castle.

The first advantage of this disposition will be, that the position of the figure will be natural; for if the fancy endow it with life, it will seem to stand on the brow of the cliff itself, looking upon the city, while the superior elevation of the pedestal will nevertheless keep it distinctly a statue.

The second advantage is, that it will be, crushed by no super-eminent mass, and will not be among broken ruins of fallen rocks, but upon the brow of a solid range of hill.

The greatest advantage will be the position of the figure with relation to the scenes of Scott's works. Holyrood will be on its right; St. Leonard's at its feet; the Canongate, and the site of the Heart of Mid-Lothian, directly in front; the Castle above; and, beyond its towers, right in the apparent glance of the figure, will be the plain of Stirling and the distant peaks of the Highland Hills. The figure will not be distinctly visible from the London road, but it will be in full view from any part of the city; and there will be very few of Scott's works, from some one of the localities of which the spectator may not, with a sufficiently good glass, discern this monument.

But the disadvantages of the design are also manifold. First, the statue, if in marble, will be a harsh interruption to the colour of the cliffs; and, if in grey stone, must be of coarse workmanship. Secondly, whatever it is worked in, must be totally exposed and the abominable Scotch climate will amuse itself by drawing black streaks down each side of the nose. One cannot speculate here as in Italy, where a marble Cupid might face wind and weather for years, without damage accruing to one dimple; the Edinburgh climate would undermine the constitution of a colossus. Again, the pedestal must necessarily be very high; even at the low part of the cliffs, it would be, we suppose, 40 or 50 feet: then the statue must be in proportion, say 10 or 12 feet high. Now, statues of this size are almost always awkward; and people are apt to joke upon them, to speculate upon the probable effect of a blow from their fists, or a shake of their hand, &c., and a monument should never induce feelings of this kind. In the

case of the statue of San Carlo Borromeo, which is 72 ft. high without the pedestal, people forget to whom it was erected, in the joke of getting into its skull, and looking out at its eye.

Lastly, in all monuments of this kind, there is generally some slight appearance of affectation; of an effort at theatrical effect, which, if the sculptor has thrown dignity enough into the figure to reach the effect aimed at, is not offensive; but, if he fails, as he often will, becomes ridiculous to some minds, and painful to others. None of this forced sentiment would be apparent in a monument placed in a city; but for what reason? Because a monument so placed has no effect on the feelings at all, and therefore cannot be offensive, because it cannot be sublime. When carriages, and dust-carts, and drays, and muffin-men, and postmen, and footmen, and little boys, and nursery-maids, and milk-maids, and all the other noisy living things of a city, are perpetually rumbling and rattling, and roaring and crying, about the monument, it is utterly impossible that it should produce *any* effect upon the mind, and therefore as impossible that it should offend as that it should delight. It then becomes a mere address to the eye, and we may criticise its proportions, and its workmanship, but we never can become filled with its feeling. In the isolated case, there is an immediate impression produced of some kind or other; but, as it will vary with every individual, it must in some cases offend, even if on the average it be agreeable. The choice to be made, therefore, is between offending a few, and affecting none; between simply abiding the careless arbitration of the intellect, and daring the finer judgment of the heart. Surely, the monument which Scotland erects in her capital, to her noblest child, should appeal, not to the mechanical and cold perceptions of the brain and eye, but to a prouder and purer criterion, the keen and quick emotions of the ethereal and enlightening spirit.

Oxford, October 20. 1838.

ART. II. *Architectural Metaphysics.* From the "British and Foreign Review."

BEING much struck with the following article, which forms a portion of a review of Mr. Hope's work in the *British and Foreign Review* for August last, we applied to the editor for permission to copy it into the *Architectural Magazine*, which, with the greatest kindness and liberality, he granted at once.

"It is evident enough, that the worship of God is an inward act of the heart and mind, and that the humblest cotter, with worn-out bible and unwashed hands, may, in love and reverence, approach nearer the Divine Being, than all

the pomp of imagination in gay services, full of gold and steaming incense ; that the deepest fervour has been felt in barns, or in catacombs ; and that the widow's mite was worth more than the whole temple. But, though this is a truth, it is a one-sided truth, and must be taken with a limitation. Man is not merely a moral being, but also an intellectual one ; and, if we are delighted to find evidence, sometimes, that he possesses, what some people choose to call a moral sense, we must recollect that he has at least five others, all of which are active, and cannot be kept idle. We never were of that great sect, that would cut us asunder, insect-like, into two parts, an ill-paired couple ; separating the practical reason, by a fixed gulph, from a strange illusory understanding ; and seeing nothing out of ourselves but base matter, to be used only for the conveniences of that machine which carries on its top the self-sufficient and somewhat pragmatistical ball of man's head. But, to separate is easy, to harmonise, the slow task of laborious art ; and we must endeavour to discover and bring to light, first in ourselves, the unity of one consistent personal being, and then, without us, that of the one creation of the one God.

For our senses do exist, and must exist, and, if not conciliated, they will rebel. Nor can we think that, for instance, during divine service in our churches, these same senses are either kept under, or drawn upwards, by being presented with blank white-washed walls, new bonnets, or, perchance, the effigy of a lion and unicorn, instead of the cross and suffering Saviour, and all the majestic imagery which our ancestors loved to behold ! We can pray without them ; who doubts it ? as we can live without good furniture, or handsome rooms, or any of the ornaments of civilisation ; with unplanned doors, like Spartans, or with no doors at all, like Epictetus. But, if we do not live so in private, but are driven, by a strong instinct of our nature, to make every little thing about us in our domestic life an image, and, as it were, a forget-me-not memorial of elegance and dignity, why should we leave these out in the noblest of our performances, and consecrate to God rusticity only ? It is not found necessary for us, in order to love our wives and children, or to transact business, or to perform any other function of humanity, that we should go into a barn or hut. Nor, indeed, are the feelings ever so divisible from the imaginary power, that they can be affected directly by abstract truth ; if it were so, then, to be consistent, we should strip our service, as well as our churches, of all ornament, and cut down florid sermons into mere assertions, and naked syllogisms. Perhaps, therefore, we are not so enlightened as we think ourselves, in reversing the order of things ; according to which, in old times, private houses were small and rude, but public buildings of a size and grandeur proportionate to the full stature of the whole state.

“ These thoughts naturally occur to one in reviewing the history of architecture ; for we find that art, in so far as it can be entitled a fine art, to have been developed in all former times in the construction of temples and churches, while mere housebuilding was thought a branch as inferior to it as the portrait is to the historic painting. For a house must always be an affair of mere convenience and habitability ; and what, in the higher style, a great authoress has termed, “ *cette grande inutilité* ” of all that excites the imaginative intellect, becomes, when applied to such structures, impertinent and absurd. But our practice works upon our theory, and we are not content now, unless we can draw down all the imposing and humiliating grandeur of the past to our own level. We find, accordingly, that the writers of the present day would reduce the art altogether to a mere mechanical one ; a sort of box-making, only on a larger scale. Of all the arts, indeed, architecture is, by its own nature, that which appears the most unsettled in its principles, from the ambiguous position it holds between the lower and operative class of arts, and the fine ones. As to music, painting, and the rest, no one can help admitting, with however bad a grace, that they lie beyond the jurisdiction of the understanding, and that beauty, feeling, or something of the kind, is what regulates the genius that produces, and the critic that judges. But, when we come to

architecture, the utilitarians, accompanied by a formidable set of carpenters, bricklayers, and upholsterers, make claim to her as a runaway slave from their territory; stone, wood, convenience, and ingenuity, being, in their notion, the only postulates required for building. It is but fair to hear what can be said on their side of the question, especially when we find a man of such genius as Mr. Hope giving some kind of countenance to it.

“‘In every country,’ says this thoughtful author, ‘we find the style of building determined by the nature of the soil, and the habits of the people consequent thereupon. In China, for instance, the taper conic form, which prevails in all edifices, and the slight and slender character, what is it but an imitation on wood, of the canvass dwellings of the original Monguls; while in Hindustan and Egypt, alluvial plains, subject to inundation, the early inhabitants obliged to keep to the highlands, and store their food in caves, made their buildings afterwards to suit their habits of life, gloomy, massy, cavernous. Thus, too, the Scythians, who roamed the Dodonæan forests, in the north of Greece, from their very way of life, and the materials within their reach, could construct no other habitation for themselves but the wooden hut, with upright posts, and transverse rafters, and sloping roof. In later ages, again, nothing but practical conveniences, afforded by the use of the arch, and the invention of glass for the enclosing of large spaces, and the want of such enclosures for religious processions in an inclement climate, and the necessity of a high-pitched roof, to throw off snow, determined the form and construction of the so-named Gothic.’

“Now, all this we willingly subscribe to, provided the other side of the question be not excluded. We admit these determining causes, but as material, not formal, causes. For, if this were all, if there were nothing more in the art than the adaptation of means to ends, the ingenuity of man in procuring gratification for his wants, and the gradual improvement of mechanical contrivance, the history of it might, perhaps, be interesting, but not more so than that of ship-building or iron-founding, and not particularly to the man of taste more than to any one else. But now, the fact is, that it does particularly interest that particular class; and this fact must be accounted for. What, then, is the general distinction between the two classes of arts? This, evidently, that the one requires nothing more than ingenuity, and is the product of only one particular faculty of man, the understanding, quite independent of his moral nature; whereas the other, and higher sort, calls into action the whole man, and its works are consequently stamped with the image of the collective fulness of his being; and, though still constructions of the ingenious animal, are presided over by moral ideas. The utility of a thing is its utility, and its beauty is its beauty; nor can we, by any juggling equation, get rid of either term, or make one stand for both. Now, a thing is useful only relatively, in relation to something else, taken together with which it makes a whole, in itself being only a part; though the very same thing, if considered by itself as one distinct thing, that is, a poetical whole, may be called beautiful; the beauty of it being its wholeness, unity, and independence. Nothing, however, is truly a whole, or essentially one and self-sufficient, but a being or person having life in itself; and all other things can have but a shadowy resemblance of this perfection. So that the beauty of all material objects must be merely symbolical, and can be in them only so far as they represent, in forms of time and space, those things which primarily and originally have their being in living souls; but which, in this, our earthly consciousness, cannot, perhaps, be seen intuitively in their essences, but are only known and deduced from their effects. We hold, then, that the beauty of a straight line, for instance, is its rectitude, that unswerving energy by which it maintains one constant direction; and the beauty of a circle, the union of infinite different tendencies in one harmonious whole, by one presiding determination; and so on, of all other shapes.

“These primary symbols we would call pure material beauty, and any others that may be found in the concrete forms of real things, relative or applied

beauty ; making a distinction similar to that between the pure and the applied sciences. All beauty, then, is an outward expression of inward good ; and either of that which is good for all soul as soul in itself, and exercising its two prime faculties of expansion and concentration, of grandeur and harmony, or else of what is good for the individual being in particular forms of life. Consequently, the highest beauty of individual things is exhibited, when the thing is such as to be susceptible of the most intimate combination with the most universal forms. According to such views, we would lay down this definition, that the art of so treating objects as to give them a moral significance, is *the fine art*. As in arithmetic, the fractional numbers must be reduced to relative unity with some one whole before they can be managed ; so, we affirm, must the partial existences of the visible world be brought to a kind of common denomination with those of the inner world, before they can be available as expressions, to use another mathematical term, of beauty ; and, be the thing *a*, *b*, or *c*, we believe that, by skilful treatment of its form, it may be brought to have such a meaning.

“ To apply these more general considerations to architecture, we must begin with some real individual existence in the world, which expresses its own nature in its necessary form ; and then observe how, in the course of time, the nature of the thing, acting, as it were, from within, and the visible form from without, work reciprocally upon each other till they reach an equilibrium in their highest possible developement. The structure of the Grecian temple was determined, in all its forms, by the nature of the materials used and the climate. Cylindrical smooth trunks, found in the sheltered interior of woods, were fixed in the ground at equal distances, tied together lengthwise by beams laid along their tops, and crosswise again by rafters laid over these from side to side ; above which, a roof, not like that of the Orientals, flat, but sloping towards either side, and terminating in two triangular gables ; and, along the inner side of the posts, a continuous wall of clay or wickerwork. The only beauty or formal expression of which such a structure was susceptible lay in the contrast of the vertical lines of the supporters with the horizontal supported, the round and the rectangular, both heightened, probably, by dark and light colours ; and in the symmetry, that is, the simplicity and sameness, of the ratio between the different dimensions, both of the whole and of the separate parts. Afterwards, when the consecrated form came to be represented in the marble of Lower Greece, a new element was introduced, namely, the proportion between the strength of columns and the weight of superincumbent mass which they sustained ; for, as the columns were set closer, and made shorter and stouter, and the weight of masonry placed on them greater, the character of firmness, constancy, and endurance, was increased, or, *vice versâ*, diminished.

“ Such was the general form, varying, of course, according to the genius of particular races. That style which was most straightforward and simple, and true to the lineaments of its wooden type ; in which the parts were not softened away, and blended together by gentle intermediaries, but large and strongly marked, and decisively separated ; in which the mass supported was nearly equal to that of the supporters ; became the established national form among the friends and descendants of Hercules. In this the few ornaments admitted were very fine and minute, and, like a delicate fringe, not seen at any distance, but so placed as to entertain the beholder when immediately under the building, when the eye could not take in the general outline, or the majesty of the bolder parts. Not so grave and serious, but more graceful and refined, the Ionians, on the delightful sea-coast of Asia Minor, did not feel inclined to separate so strictly the essentials and the accessories. Besides, in their settlements, the Acropolis, or citadel planted above the town, on a commanding height, was not so necessary a feature as in the armed aristocracies of the invading Dorians ; so that the sterner characteristics of the Dorian type, intended to be seen from far, were softened down, and the small ornaments so magnified as to leave no great distinction between them and the

main forms of the structure. Strong geometrical precision was abandoned, and the fancy of the architect allowed to run out into playful appendages, such as the volutes, or ram's horns, and the swelling cushions, and the bases required to balance at the lower end of the column the effect of so large a projection in the capital; and all plain rectangular masses were broken up into a multiplicity of graceful mouldings. In short, if the Doric style had the expression of a great and grave man steadfastly employed in some weighty business, the Ionic may be imagined to represent the graces of a lovely woman, who refuses not to heighten by ornament the delicacy of her light figure. In after-times, when the two great races had lost much of their distinctness, and the smaller states had been broken down, and amalgamated into larger masses, a third order came into vogue, resulting from a combination of something of the strength and size of the first, with the luxuriant decorations of the second; and such was the Corinthian. Accordingly, it has neither majesty nor elegance, but richness; and was well suited to the age of Alexander and his successors; and afterwards, like the Asiatic style in oratory, acceptable to the Romans.

"Here we see consistency and propriety still further sacrificed to effect, while the curvilinear forms of vegetable growth, suggested, perhaps, at first, by the crowns of green leaves wreathed round the capitals on festive days, were fixed and petrified in hard stone; in all other parts, too, ornaments heaped upon ornaments, without any meaning, so as to produce an appearance of magnificence, delightful at first to the eye, but leaving no impression on the inward mind.

"These three orders, significant of three very distinct ideas which prevailed among the different races of the Greeks, were, however, afterwards used indifferently by all, according as propriety might require; just as in Pindar we find the three moods of Dorian, Lydian, and Æolian music adopted in different odes, or different parts of the same ode, as the subject might require dignity and sedateness, or easy elegance, or a rich and Bacchanalian fancy. Thus, as Mr. Hope observes, to Zeus, and Pallas the pure offspring of his intellect, the temples would be built of the Doric style:—

"'While in the fanes of the gayer Apollo, the Bacchus of later date, and more luxurious habits, displaying more affinity to the female character, they might, by preference, employ the Ionic equally ambiguous; and the shrines of Venus might be marked by the order invented in the city where that goddess had her most beauteous and most celebrated priestesses. But still the Greeks reserved to themselves the right of giving to each forms more restricted or multiplied, more simple or rich, and proportions more sturdy or delicate, according to the peculiar exigencies of the edifice or situation.'

"'So that, between each order and the two others, an almost insensible gradation exists; and the Doric of the temple of Neptune at Corinth, and that of Juno at Nemea, differ as much in their proportions as the statues of the Farnese Hercules, and the Belvidere Apollo.' (Page 40. 43.)

"To sum up the result of this hasty sketch, we observe that the general expression of Grecian architecture was that of the completeness of a whole fully developed into all its parts, and the perfection of each part, and its due subordination to the whole; *that*, in short, of a real organised being in the fulness of its existence, and the justest balance of its faculties, and either worthily undergoing some heavy trial, or, with temperate dignity, enjoying a serene life. And this was exactly the character of Grecian ethics, which rested mainly on the idea of justice and harmony, or proportion, and according to which the subordination of the inferior faculties in the individual, and of the inferior individuals in the state, constituted their ideal of moral and political excellence. Now, we cannot imagine that this coincidence between the forms of their masonry and their moral systems was caused by the want of glass, as some would tell us; or their ignorance of the arch, or the habit of living in the open air, and offering sacrifice before a statue. Such were, no doubt, the *sine qua non*, *that* without which it would never have come to pass, the material causes

of their style of building, the causes of its rudest beginning; but how, in the name of possibility, of its highest form and completest developement?

"We do not mean to say that Mr. Hope has adopted such a degrading theory as that which we endeavour to controvert; his genius, surely, could not stoop so low. But the fact is, that in this learned and elaborate book of his, the general tendency of his observations is towards the material side of the question; and the moral habits of either ancients or moderns are seldom mentioned or alluded to as having anything to do with the business. As a zealous and accurate observer of the phenomena of history, he deserves all praise; and his knotty and contorted sentences, full of dense matter, will form valuable knee-timbers for the construction of some more ample theory. We wish to give the reader a general outline of his essay, which includes the whole history of European architecture, and its offspring the Mahometan; and we will, therefore, proceed to extract his account of the Roman and Byzantine styles." (*British and Foreign Review*, August, 1838, p. 9.)

ART. III. *Critical View of the Architecture of New York.* By M. F., a late Member of the Profession in England.

NEW YORK is beautifully situated at the southern part of a tongue of land formed by the confluence of the Hudson or North River, and an arm of the sea called the East River, which separates it from Long Island. This tongue of land is, in point of fact, isolated by a small creek, crossed by two or three bridges, towards the north. The city, at present, does not cover a third part of the length of the island, which is about ten miles; though the remainder is occasionally built upon, and marked out into fifteen *avenues*, so called, running in straight lines from south to north, crossed at right angles by 156 *streets*, from east to west, at equal distances; the numerical order giving the names of the avenues and streets, commencing from the south and east. South of the extreme point of the town, the shores of Long Island, New Jersey, and Staten Island form one of the most noble, extensive, and picturesque harbours in the world. The old and populous part of the city is not so regularly planned; but may be easily comprehended by imagining an equilateral triangle, point downwards, nearly bisected by the principal street, Broadway, which extends $2\frac{1}{4}$ miles in a straight line. The southern end is terminated by the Battery Walk, a fine promenade, bordered by a stone pier against the sea, and divided into turf and wide paths, planted with weeping willows, elms, planes, white poplars, and other trees; exhibiting the most lively and picturesque view of the bay and shipping, and affording an immediate and quiet retreat from the noise and bustle of the neighbouring wharfs and streets. The wharfs are formed by building out numerous piers into the river, at right angles to the quay or street along which the warehouses are built; the vessels lying in the *slips*, as they are called, between the piers, and the piers serving for roadways to facilitate the unloading of the cargoes.

The general aspect of the city from the bay, and particularly from the heights of Brooklyn, on the opposite shore of the East River, is strikingly grand; regular and lofty lines of warehouses rising behind the crowded masts and their gay pendants, and numerous spires and turrets crowning the whole. As more wood than coal is burnt, and most of the coal is of the anthracite kind, the buildings are totally unsoiled by smoke, and, being mixed with trees, present a brilliance and variety of colour, much more resembling an Italian or Dutch, than an English, city. The prevailing colour arises from the red bricks; but, as the bricks are much smaller than ours, and freshly pointed, their unpleasant glare is considerably softened; many houses, also, are coloured white or yellow. The city is regularly, but not very evenly, paved throughout; the sandy soil probably does not form a substratum sufficiently firm. "The whole of the southern triangular part of the island," it is said in a *Geological Sketch*, "is a great and capacious basin, to the bottom of which the deepest wells do not reach, filled with alluvial sand of different natures, enveloping an immense variety of fragments of almost every kind of rock, primitive, transition, and secondary. All the rest of the island is essentially primitive, consisting of one formation, granite, which is, in some few places, covered or penetrated by schistose mica, hornblende, and white marble at the upper part of the island. This white marble forms the most valuable building-stone; and it is a matter of surprise, that it is only recently superseding the unsightly red sandstone, which has been most generally employed. The gneiss or slaty granite is now almost exclusively used for the foundations of buildings, and also in the construction of the Hospital, Almshouse, some churches, &c. The range of perpendicular trap rock on the Jersey shore constitutes another valuable and convenient resource for building materials."

The most prominent building in New York, both in point of size and beauty of design, is the City Hall. It is admirably situated in the widest part of a triangular area, planted with trees, called the Park, at the intersection of Broadway with another of the principal streets. It was commenced in 1803, and finished in 1812. The name of the architect is not mentioned in the *Picture of New York*, 1828; but I have not the least doubt, from internal evidence, that it was designed by an Italian. The style is florid Italian, but a chaste specimen of that style. The building forms a parallelogram on the plan, being two stories in height, besides a basement story. It has a projecting wing at each end, embracing three windows in width, and a slightly projecting centre with five windows, leaving four more on each side between the wings. There is a projecting and recessed Ionic portico in the centre of five intercolumniations, with coupled columns at the angles, ascended by twelve steps, and surmounted

by a balustrade, the base and cornice of which are continued round the front and two ends of the building. The wings have pilasters in the front, coupled at the angles, to correspond with the centre. The centre and front of the wings have an upper order of Corinthian pilasters on the second story, with a balustraded parapet above, except in the centre, which has a plain attic, crowned with a clock turret, square on the plan, with coupled composite columns, pedestals, entablature, and scrolls above, projecting octagon-wise from the four angles, and a small circular dome, and figure of Justice on the summit. The windows are circular-headed through the principal story, and also in the centre of the second story, bordered by piers, archivolts, and imposts attached to the pilasters; the remainder are square-headed, with panels over them. The front and both ends, above the basement story, and the cupola, are built of white marble from Stockbridge, Massachusetts; the remainder of reddish brown freestone; the roof is covered with copper. The entire length of the building is 216 ft., breadth 105 ft., and general height 51 ft.; and, altogether, it has a most decidedly imposing effect. In the interior arrangement of the plan, the portico and vestibule lead to an open corridor extending the whole width of the plan, on both stories. There are two staircases, one at each end, and a grand geometrical one in the centre, of a circular form, with a gallery over, surrounded by ten marble columns supporting a paneled dome and lantern, behind the turret before-mentioned, and out of sight on the principal elevation.

A new Exchange and Custom-house are in course of erection at the present time. They promise to be massive, and handsome Grecian edifices, but are not sufficiently forward to pronounce any criticism upon.

We now have to describe a building recently erected, which is not only an honour to the city and the American nation, but a perfectly unique specimen of its style, such as all Europe cannot produce. It is the Hall of Justice in Franklin Street, a model of an Egyptian temple; on such a grand scale, as to be in degree only inferior in effect to its magnificent prototypes at Dendyra and Thebes. The plan occupies what is called here an entire block of buildings; that is, it is isolated by streets on every side. The principal front consists of a four-columned portico, with appropriate entablature, well raised on steps, projecting the width of the return intercolumniation from the main wall of the front, which is only one story high, and lower than the centre, and has five very lofty windows, with proper architraves and cornices on each side. Behind the four external columns, are two columns between two antæ, or square pillars; and between these columns and antæ, a second flight of steps leads to an

open vestibule, containing two rows of four columns each, ranging behind the columns in *antis* previously mentioned, but, of course, on a higher level. The diameter of the external columns is about 5 ft., of the internal 4 ft., from which may be formed an idea of the proportionate height. The external columns are of three pieces of stone each, consisting of a palm-leaved capital, a plain shaft, and a zigzagged base. The internal columns have a plain base, reeded shaft, and lotus capital. The ceiling of the vestibule is formed by stone landings over the massive architraves. Characteristic doors on both sides, between the intercolumniations, lead to smaller police offices, &c. ; the centre one forwards to the sessions court, which is square on the plan, with eight columns ranged circularly within, supporting a circular architrave, coved inwards ; the ceiling rising in several square sinkings, circle within circle, to the centre. There are triple windows on three sides, and a gallery on the fourth. Various other offices, and a prison, are included within the entire plan ; the external walls of which exhibit the same consistent character, picturesquely but uniformly broken into varied heights and widths. The entire building is of large blocks of grey granite, similar in colour to that of Waterloo Bridge, but of finer texture. The only faults I noticed were, a slight stiffness in the carving of the palm leaves, compared with my recollection of Denon's engravings ; the too frequent introduction of the beautiful globe and eagle's wings ; and the inappropriate and unmeaning rows of mummy-shaped figures over the doors of the vestibule. In other respects, it is equally well designed and executed.

The oldest episcopal establishment in New York is Trinity Church, in Broadway. The present edifice, however, is of no older date than 1788 ; the former one, on the same site, built in 1696, as well as many other churches, having been destroyed by fires, which are very frequent here. The dimensions are 104 ft. long, 72 ft. wide, and the spire 198 ft. high. The style is Gothic, so called ; but, both in design and detail too contemptible for notice ; it can only be compared to those card-paper toy-models of churches, covered with glass dust, which are sold about London streets. All the other Gothic designs here, except the last-erected one, the University, which, however, will not bear minute criticism, are in the carpenter's or Batty Langley style. The other old episcopal churches are handsomer, with porticoes of a Roman order, and steeples in the style of St. Giles's, or St. Martin's in the Fields, London. The interiors are divided by columns into nave and ailes, but are very inferior in design and execution. The best specimen is St. John's, in Hudson Square. The upper part of the steeples is generally built of wood, painted stone colour. And here it may

be proper to mention the extensive use of woodwork, which lasts so well in this dry climate. Besides all the purposes to which it is devoted with us, it is used for entire houses occasionally, for external steps and floors, porticoes, verandas, and balustrades; for the cornices of houses, which are hollowed out for the gutters without lead; and as shingles for roofing, when it will last sound without painting, never gathering the least mould or moss, and turning to a grey slate colour. Slates are occasionally used; but, I believe, all imported from Europe. I do not remember to have seen tiles at all.

This extensive use of woodwork seems to have made the joiners the principal designers, before the establishment of the architectural profession, which at present is sufficiently numerous; and the circumstance of the city's being a seaport, and the same workmen being employed as well in fitting up the cabins of ships, has given a decided *naval* character to the ornamental architecture of the city. The general style of the external doorcases (except the most recent Grecian designs) is exactly the same as that of the round houses, or covered parts of the upper decks of ships, consisting of petite columns, and minute mouldings; and similar details run through the finishings of the rooms.

“If to do good were as easy as to know how to do it, chapels had been churches, and poor men's cottages princes' palaces.” The above ejaculation of Shakspeare has been singularly accomplished in this country, which has been justly called the “paradise of the labouring classes,” and in which, from the equal footing of all religious persuasions, *chapels are churches*, both in name and importance. But, in New York, few but the Episcopal, the prevalent sect, have steeples. The Presbyterian, Methodist, Catholic, and other churches, are generally in the form of Grecian Doric or Ionic temples; the porticoes fairly executed in white marble, or red brick and stone. The interiors are often expensively fitted up, particularly the pulpits, which are generally made in the form of a French tribune; that is, a raised platform, with a desk in front, hung with rich crimson drapery, with an elegant candelabrum on each side, and a pilastered and draped kind of altar-piece against the wall behind. The pews are models of convenience and elegance, being uncramped for room, and having the backs sloped at an agreeable angle; the mahogany capping rounded off, so as to present no projection against the head, and intersecting with a scroll arm, which forms the end of the pew, with the door as low as the bottom of the scroll. If the steepled churches are immeasurably inferior to our London ones, those which we should call chapels are greatly superior in point of size of the porticoes, and expense of execution. In general, if an absence of good taste is often visible, particularly in the white glare of the interiors, we are seldom or never disgusted with that

niggardliness, which so often ties up the hand of genius in England, both in public and private edifices, vainly trying to unite two incompatible things, parsimoniousness and display.

The theatres have no architectural pretensions outside, and, as far as I have seen, very little in the interior.

The appearance of Broadway, the principal street, is more like that of a Parisian boulevard than any thing else. The frequent trees, the canvass awnings against the sun before almost every shop, supported by turned white posts at the edge of the footway, the gay colours of the houses, the display of the shops, strings of omnibuses, and vehicles of all descriptions, crowds of pedestrians and loungers at the hotel doors and bar-rooms, and, last not least, the unrivalled elegance of shape, walk, and costume of the fair inhabitants, form a scene of attraction that will bear comparison with any foreign city. The shop fronts are not equal to ours, either in design or expense of execution; though the interiors of many stores are handsomely fitted up. In some, a pretty ceiling is formed by white drapery, gathered into radiated panels, like the silk front of a pianoforte. The hotels, which, as well as the boarding-houses, are very numerous, have, in general, recessed porticoes, or open lobbies of some kind, but in other respects are not remarkable. Even the great Astor House, perhaps the largest hotel in existence, which accommodates 200 or 300 persons, though substantially built of grey granite, has no architectural feature, but a heavy recessed Doric porch and stone staircase: the remainder of the front being a mere flat wall, perforated by an infinity of small manufactory-sized windows. This bluish grey granite, which will bear tolerably minute carving, is generally used for the ground story piers and bressummers of all the recently built warehouses, and many of the stores or shops, and occasionally in the fronts of ornamental edifices, and has a good effect. Pillars and columns, of the height of two stories, are obtained in one piece.

The private houses, of first and second rate description, are more spacious, lofty, and expensively built, than our own of a similar kind. They are not dissimilar in plan; the two principal rooms, on the ground, or on the first floor, being thrown into one by folding doors, often by double doors, so as to allow of two large closets between the rooms. The finishings are well executed, and they have large marble chimney-pieces imported from Italy, generally with small detached columns supporting a frieze projecting over each. The frontispieces to the entrance doorways of the more modern houses are, many of them, of beautiful design; generally with three-quarter columns, showing a full front at the returns, with spacious landings, broad flight of steps, and plinths, forming a parapet in two heights, connected by a carved scroll. Others have marble balusters and

inclined rails, terminating in scrolls, and scrolled steps at bottom; or the rail is received into a circular pedestal, supporting a cast-iron candelabrum. The doors have tall Grecian panels, side lights, and windows, and are hung on pilasters. In the windows of dwelling-houses a very bad taste universally prevails of having stone lintels (instead of gauged arches), and a plain sill below, but without architraves to connect the design. To avoid poverty of appearance, the lintel is sometimes curved into a flat pediment moulding, which makes it worse; or divided in width into projecting and grooved square block panels, so as to give the most painful idea of insecurity, in the very place where security is most required. In the back fronts of houses, neat wooden-pillared verandas, open or enclosed by shutter-blinds, are prevalent, with stairs from the first floor to the level of the small garden, where vines and standard peach trees will flourish as well as in the country.

The North or Hudson River being upwards of a mile wide, and the East River half a mile wide, in the narrowest parts, communication with the opposite shores, to Jersey city, and to Brooklyn, or Long Island, is effected by most convenient steam ferryboats, that transport goods, passengers, vehicles, and horses, without being unharnessed, every quarter of an hour, from numerous points of the town. Brooklyn is a curious specimen of a town almost entirely built of wooden-boarded houses, in regular streets crossing at right angles, and planted with trees, whose gay verdure prettily contrasts with the white-painted fronts, porticoes, and wooden railings. A remnant of Dutch neatness, and peculiar taste, is very perceptible here. The general village architecture in the neighbourhood of New York is of a similar material, though brick and stone are often used as well. The better sort of detached country houses have generally a portico of four or six tall wooden columns, occasionally on two stories, with wooden floors and steps, left unpainted, supporting a lean-to shingled roof, or the main roof continued in the same or a less acute angle. Gables are invariably used instead of hipped roofs; and, in the largest specimens, the gable is often made a regular pediment, with a more solid portico underneath it. Wooden models of Grecian Doric temples are common in the village churches; and very pretty lodges for the toll-keepers at the steam-boat stations on the Hudson River are frequently met with, remarkably resembling the architectural forms in the Herculaneum paintings, built entirely of joiner's work.

In conclusion, the present writer has not yet had opportunities of comparing the architecture of New York with that of the other American capitals: but, viewed by itself, he considers it, on the whole, as far superior to his previous expectations, and probably to what most people would expect to find in a comparatively

still rising nation ; while the recent evidences of improving taste and public spirit of the citizens offer the most certain promise, that, at some future day, New York will equal in splendour, as well as in prosperity, the proudest cities of the old world.

New York, September, 1838.

ART. IV. *A few Reflections upon Windows.* By HENRY NOEL HUMPHREYS.

WINDOWS form an important, perhaps the most important, feature in modern architecture. In the present state of society, buildings of a domestic character have assumed an importance which belonged to them at no former period ; not so much from their individual splendour or extent, as from their great and still increasing number. I do not mean mere houses, but am rather speaking of such buildings as almost deserve the name of palaces ; and which the wealth and importance of a middle class, the existence of which is the main feature in the modern social system, has multiplied to an incredible extent. To buildings of this class, the usual decorations of ancient temples, columns, porticoes, pediments enriched with vast groups of sculpture, &c., are totally inapplicable, for the simple reason, that they are *unnecessary*. To the buildings of which they formed a part, they were applicable, for the same simple reason reversed ; namely, that national rites, customs, and climate rendered them *necessary* ; they were consequently legitimate features upon which to lavish the taste and skill of the architect, which, in an age peculiarly favourable to monumental architecture, brought their proportions and decorations to a perfection which is the more wonderful the more the details and principles are critically examined.

That the extreme beauty of the remains of those masterpieces of architectural invention should, at a period when modern Europe was emerging from centuries of literary darkness, and beginning to appreciate the polish of the ancient world, in the relics of her literature and the ruins of her temples, have induced the architects of that period to attempt an imitation, in their churches and other public buildings, is not astonishing ; even when we consider that those glorious results of an architecture upon other principles, the Gothic cathedrals, were before their eyes. But that this feeling should gradually sink into mere servile plagiarism, such as stealing detached features, or entire parts, and placing them upon buildings with which they could in no way combine ; columns supporting nothing ; a pediment inserted in a square flat front, with a flat roof above it, of which I could point out more than one example ; is an abuse of the principles of imitation and adaptation which I cannot understand.

I have made these remarks, to prove, as it appears to me, that the principal features of ancient architecture are not applicable to modern domestic buildings; and that the wants which, in other ages and other climes, called them into their beautiful existence, are not among the wants of a modern European edifice of a domestic character, at all events in our climate.

Having come to the conclusion, that what were the main features in ancient architecture are not the legitimate subjects upon which to exert the taste and invention of the planner and designer of a modern mansion, the question becomes, What, then, are the legitimate means of enriching a building of such a character? Upon consideration, we shall see, at once, that the principal features *must* be the entrance doors and windows; and these are, consequently, the proper vehicles for ornament and decoration. And, as the front generally presents only one door, and many windows, we easily arrive at the conclusion that, in modern domestic architecture, as I advanced in my first sentence, windows form, or should form, an important, perhaps the most important, feature; and, like the expressive eyes of a beautiful woman, at once convey the sentiment and general character of the fair structure.

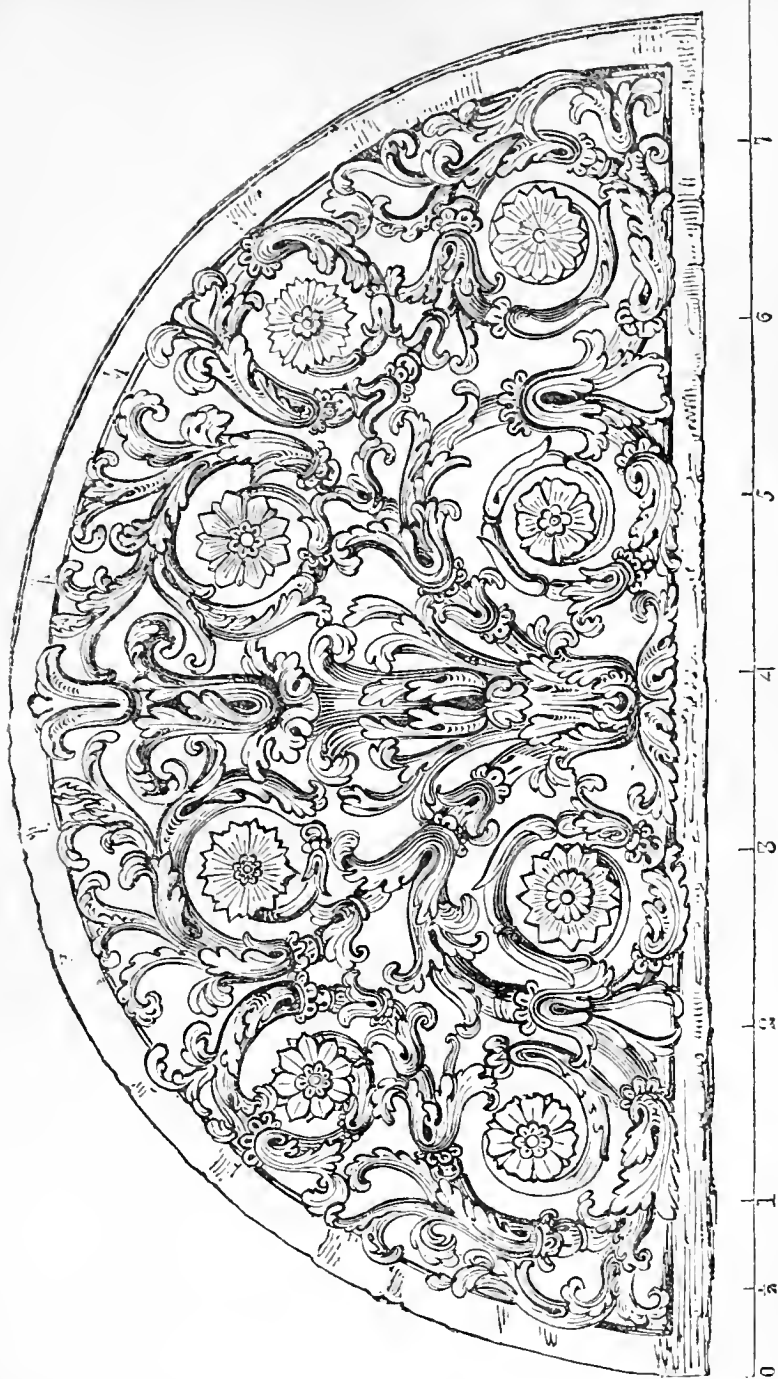
Some have asserted, and exhibited their conviction in practice, that a building, purely designed in any of the Greek or Roman orders of architecture, should, though highly enriched in every other part, be divested of even a single moulding round the windows. This, it will be seen at once, from my previous remarks, is totally at variance with the principle I have been advocating. The effect of this method is to give the appearance of a handsome building, once complete in itself without windows, in which, to gratify some afterthought of the proprietor, or to suit some change of destination in the building, a person, not an architect, has been employed to saw out the square apertures in question, and thus effect windows. Windows produced in this manner could never appear as though they had formed part of the original design; and anything which does not appear to form a part of the original conception, complete and entire, and in accordance in all its parts, must be a great fault in constructural design. Besides the reason contained in this argument, there is another, which, most likely, would have more weight with the maker of such a design; and that is, that those very authorities which, so scrupulously followed, have provided him with his columns, his cornice, his pediment, &c., have also provided proof that, where windows were introduced, which was but rarely in ancient public buildings, from the principle of their general structure, they were enriched with mouldings, in accordance with the order of the building. The authorities are scanty, it is true, but sufficient.

Another, and a much larger, section, I hope, agree that the decoration of such essential parts of a modern house as doors

and windows, ought to precede all others ; and that the introduction of any more extraneous ornament, till these innate features, if I may use the term, are suitably decorated, is to proceed in the path of bad taste and false principle. It is rather designing without principle, without which there can be no true taste.

It is difficult to recommend a particular style, as that must be decided by the circumstances of situation and use ; but many valuable ideas may be gleaned from a review of what the invention of architects has produced, beginning with the period of that Greek and Roman architecture which has so wonderfully influenced modern works after the lapse of so many centuries, when it might fairly be supposed that the ages of Gothic and Saracenic splendour had obliterated its very memory. The remains of windows in ancient Greek and Roman temples, or other public buildings, are so few, as I have said, and those few so well known to every classical architect, that they call for no description. Of the more rich Roman period, however, Woods has made a remark, of which Candidus has observed, in the *Architectural Magazine* : “ It is rather tantalising on the part of Woods, that he has not given any sketch of what would, I dare say, have been quite a novelty to most of his readers, infinitely more so than the subjects of many of his cuts, and an exceedingly welcome one also, unless he has greatly overrated the thing in his account of it. Speaking of the Palazzo Mattei at Rome, he tells us that in the lower court are some valuable fragments of architectural ornaments, built up in the walls ; and, in particular, two semicircular windows, where the rich foliage, which occupies a part of the opening, shows that the ancients knew how to produce an effect somewhat similar to that of the tracery in our Gothic windows, without at all departing from the character of their own architecture. So, then, it seems there is a genuine classical novelty in store, which no one, not even Woods himself, has yet served up to us upon paper.” (See p. 221.) I had imagined that beautiful piece of sculpture published and well known ; for I have no doubt that Woods refers to the one inserted in a wall of the cortile of the Mattei Palace at Rome, of which *fig. 281.* is a sketch taken upon the spot. It is perforated between the foliage, and appears to have filled the upper part of an arched doorway ; at all events, such is the general impression of many French architects, with whom it has been rather a favourite study, for they have introduced it, or something very similar, in more than one instance, in the upper part of the great doorways, or *portes cochères*, of the great hotels of Paris. It forms a good example of the only manner in which an effect similar to Gothic tracery could be introduced in the windows of buildings in the Roman style. In the palaces of the emperors, it is probable that openings were frequently enriched in this manner ; and, from the

281



large scale, it is probable that this had its place on the Palatine Hill in the palace of the Cæsars.

Of the windows of the private dwellings of the Greeks and Romans we know little, except that it is quite certain they had windows, and that, after the age of Augustus, they were by no means uncommon. The paintings upon the walls of Pompeii, many of which, no doubt, belong to a much earlier period, also represent windows, although the general structure of the houses

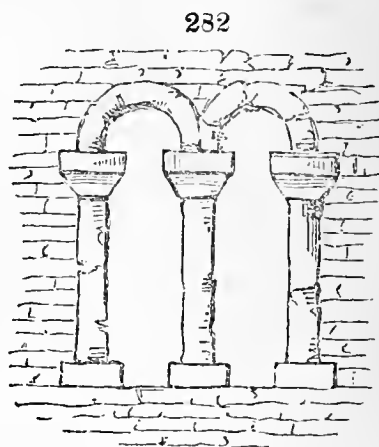
shows that they were not in very general use. These paintings are too hasty and inaccurate to give any idea of the architectural style; nevertheless, I regret having lost the sketches I made. In the later period of the emperors, however, windows must have been common enough in Rome, if not from choice, from many urgent circumstances; one of which was, that the land became so valuable in the most frequented parts of the city, that it was usual to build story above story, as in modern houses, so that the possibility of lighting the lower apartments from the roof no longer existed; and this custom of building up the houses story above story, in the most valuable situations, was carried to such an excess, that, even so early as the reign of Augustus, an edict was passed to prevent the abuse of a practice by which the public safety became endangered. This edict is one of the proofs that Roman houses must have had windows: but this is a case where it may be said they were adopted from necessity. There are other proofs that windows, or apertures in the *sides* of apartments, were not an unusual mode of admitting light among the Romans after the age of Augustus. In Cicero's letters, we find him defending the smallness of the windows of his house on the Palatine Hill against the strictures of his critical friend Atticus. Pliny enumerates the number of windows in the apartments of all his villas. But hundreds of detached remarks might be cited to prove that windows, much like our modern windows, were in use in Roman dwellings. Tibullus, for instance, commemorates the fate of a woman who fell from a window into the street. It appears, also, that glass was eventually used by them in their windows, though always a luxury; for it may be presumed that the art of making glass in large flat plates was never thoroughly understood by them, though fragments have been discovered at Herculaneum. Pliny, however, had glass *windows* and *doors*, which he does not speak of as a rarity: he, however, mentions that, before his time, the lapis specularis was in general use; a sort of mica, which split easily into thin plates, and was brought principally from Spain. Lasteyrie, in his *History of Painting on Glass*, quotes a curious passage, which corroborates this statement of Pliny, respecting the lapis specularis. His extract is from the Jewish writer Philon, who was ambassador to Caracalla from the Jews of Alexandria. He describes the emperor receiving the embassy while busily engaged in superintending the building of a palace, where the writer saw workmen inserting blades of a transparent substance into windows. It is most likely, however, that, in that climate, neither the glass nor the mica were common to the windows of ordinary houses; for we know that, even in our own more northern country, shop windows were unglazed a century or two ago. Since, then, it is ascertained that the Romans had

windows, we may conjecture that, in the superior dwellings, the taste of their architects produced many beautiful designs in that feature of architecture, which are unfortunately lost.

At the crash of the Roman government, by the irruptions of barbarous tribes, incapable of appreciating the beautiful results of civilisation, architecture must have fallen into the lowest state. Shelter, rather than luxury or splendour, was all that was required; and the apertures for the admission of light, in buildings of that dark and barbarous period, were made as small as possible; as each house became a fortress, and even the cottage was built with a view to enable its inhabitant to repel any sudden attack.

The style of window, varying in size and rudeness with the character of the buildings, was much like the sketch shown in *fig. 282.*, taken from a window in the

remains of a small house near Ravenna, belonging to the earliest Lombardic period. In this style (which was a reminiscence of the Roman in barbarous hands, the features being preserved, but perverted in application,) arose, a little later, many works of noble extent, the first effect of the already growing wealth of the church; a fine monument of the style is the cathedral of Trent. But these architectural



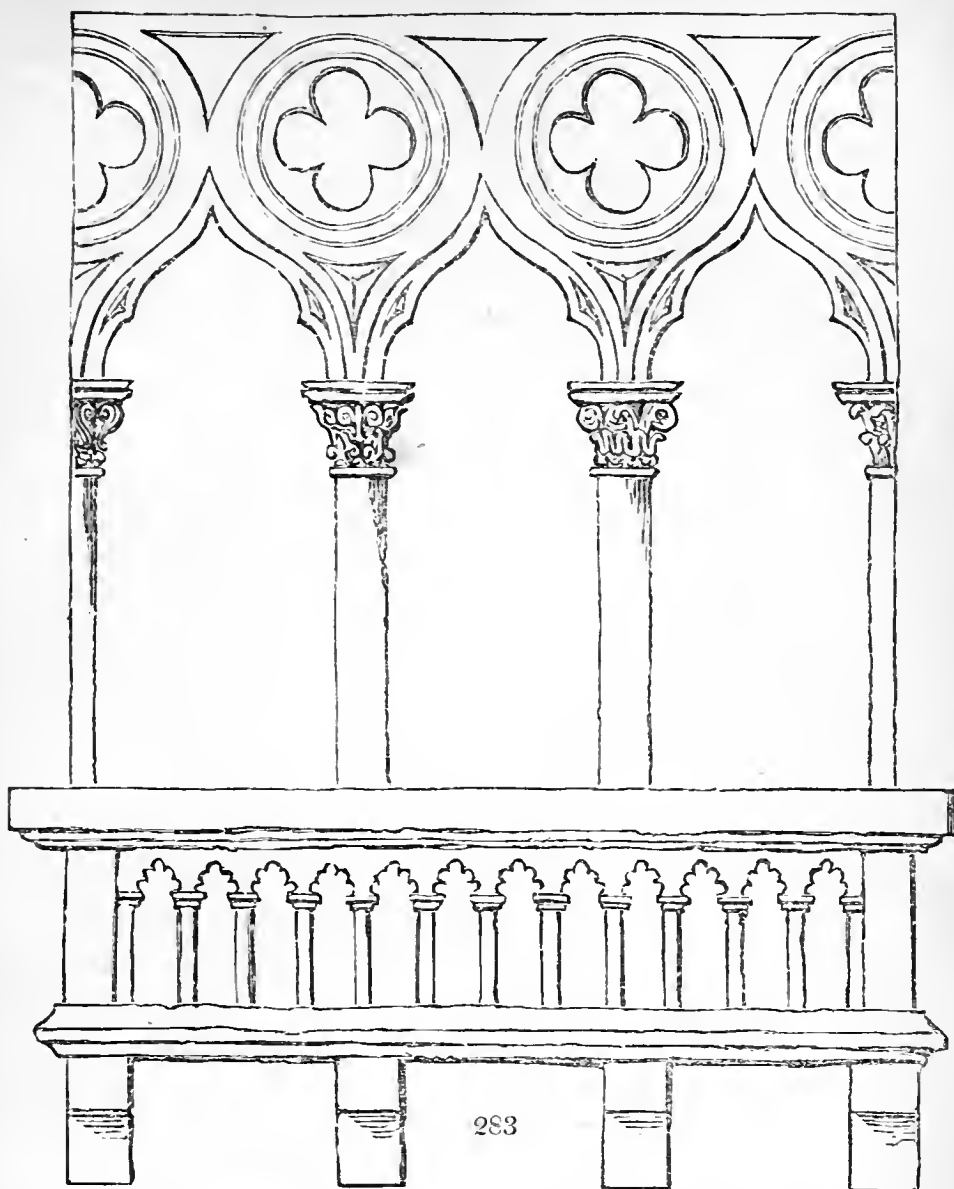
efforts were confined to religious buildings, and domestic architecture made little progress; for the window given above will give a faint idea of its details, if we allow for a gradual improvement in proportion, and the production occasionally of some rude carving, till the introduction of the pointed style, generally called Gothic, about the twelfth century. At that period, the arts in general began to revive, and the new architecture, with its pointed arches, (whether derived from the Saracens, who now possessed great part of the south of Europe, or originating in the manner ingeniously supposed by Möller, matters little,) began to assume a consistency and homogeneity of style, which at once showed that fixed principles were at length at work, and which, carried out, produced eventually that graceful and beautiful Gothic, which yields to no school of architecture in the science displayed in its construction, or in the elegance and invention displayed in its design. We have, in England, no specimens of windows of a purely domestic character in this style earlier than the Tudor period, and those examples are too well known to require attention; they have served as models of windows to all our modern Gothic houses. Neither do the windows previous to the pointed style, in this country, require

mention. In the castles, they partook of the Lombardic style, of which a specimen has been given ; and these were the only residences where anything like architecture was attempted, except, of course, conventual buildings, with which we have nothing to do, as I wish to separate domestic architecture, as much as possible, from that of a religious character, for, in every perfect school of architecture, they have ever been distinct.

For windows, then, of dwellings, in the early period of the pointed style, we must look elsewhere ; and Italy again affords us an example. The commerce of Venice raised within her the arts of civilisation, while the rest of Europe was yet immersed in barbaric chivalry, or more barbaric bigotry ; her insular situation protected her from the wild aggressions of the fighting princes of Europe ; and, while they were fortifying castles and destroying them, the merchant princes of Venice were building palaces, which time has still spared as monuments of her early greatness. Here we find buildings of a purely domestic character at this early period, where security enabled them to construct windows of fair and open dimensions ; and I give, as an example, one from the Pisani Palace (*fig.* 283.), of which the simplicity and nobleness of design must at once strike every connoisseur in architecture.

The next style to be observed is the more florid Gothic, of which we have ourselves beautiful specimens ; but then that Tudor Gothic to which I allude is peculiar to England : and there was another florid Gothic of France and Germany, which well merits the attention of the architect, more especially in that feature which has to do with the present essay, its windows. I am not able, at the present moment, to find a favourable example in my portfolio. In Italy, too, the florid Gothic presents beautiful examples in windows, quite peculiar in style and feeling, but of which I am equally at a loss for an example.

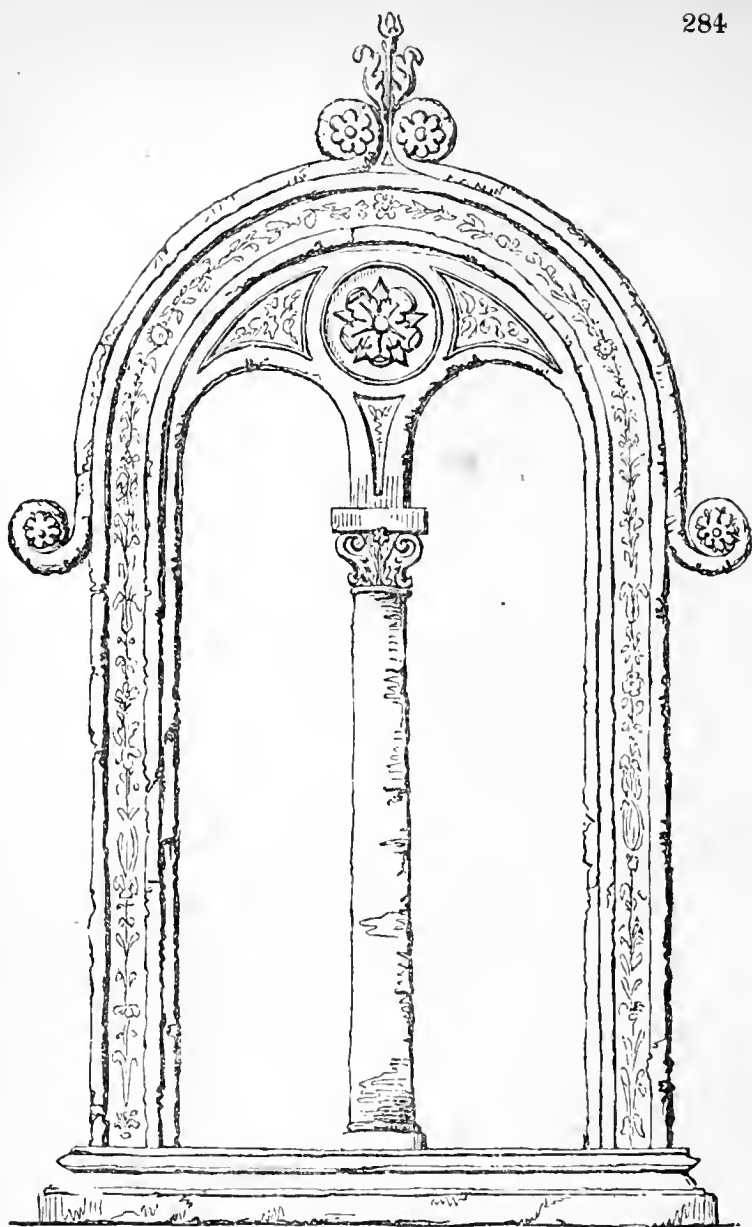
Having followed the Gothic to its most florid and last phase, we must retrograde a little, in order to mark the early steps of its fall. The first serious innovations took place in Italy about the middle of the fourteenth century, when the ruins of ancient Roman works began to attract the attention and study of the great artists of that age. The first result of this study produced combinations, often singular, but frequently full of grace and beauty ; for the architects of that day copied, not as plagiarists, but as poets. As a singular, and at the same time beautiful, specimen of the earliest amalgamation of the styles, I give an example of a window from an old palace at Bologna. (*See fig.* 284.) Here we have the Gothic disposition of parts still perfect, but modified in form, and a new and totally distinct feeling instilled into the minute details ; the arabesque character of which was doubtless inspired by the Roman style of painted interiors,



many of which, with all their beautiful designs still fresh, existed in the time of Raphael.

Many beautiful conceptions were realised about this period; when, freed from the trammels of any fixed school, the fancy of the architect was alone his guide, but always governed by simple and pure principles, and inspired by noble examples. Indeed, a voluminous work might be filled with beautiful examples of this interesting stage of the art, but my space obliges me to go forward at once to notice the next marked period.

This was the period of Brunelleschi and Bramante, who, more fully imbued with the feeling inspired by the arts of the ancients, of which they had so many examples before them which are lost to us, completely eradicated the last remnants of Gothic feeling, and established a style as perfectly pure and consistent in all its parts as it was distinct from either the Gothic or all that we



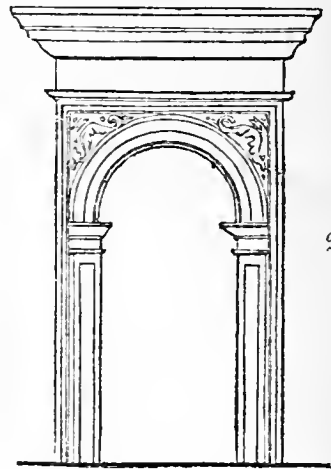
know of the Roman. This was the style called the cinquecento. It is very interesting closely to observe the designs of these great architects, who, with all the great models of antiquity before them, and having totally discarded the Gothic, only took such features as were in accordance with the destination of the buildings they erected. It is possible that there still existed at that time some Roman buildings of a domestic character, which might afford them some hints for the beautiful palatial style which they created (a palace of Domitian is mentioned as still in existence); however, it is certain that they were not seduced by the splendour of those noble columns with their glorious acanthus crown, to insert them where they were not required; they did not imitate the portico, nor were they led away by the grandeur of the noble pediment. Full of the poetic feeling of the great artist,

their models only served them to form new and original combinations, in accordance with the character of the structure which was required of them. These were the great men who conceived the idea of the dome, that triumph of architectural skill, and planned the great St. Peter's; for Michael Angelo was but an after interloper. Bramante, in designing the palaces of which several beautiful examples remain, followed the principles which I have been endeavouring to advocate. The entrance and the windows were made the principal vehicles for ornament; and, since the civil contentions which convulsed the middle ages were subsiding, this feature, in town palaces, which were no longer required to be fortresses, assumed its proper dimensions, and admitted that light freely into the apartments of a dwelling, which the fierce character of the times had long obliged them, for safety, to exclude. So that the palaces of Bramante, and those of that somewhat earlier period when I have described the first innovations upon the Gothic to have been made, are models which, with slight alterations of interior arrangement, might serve for a modern residence. As an example of the graceful windows of Bramante, I give one from the Palazzo Giraud, Rome. (See *fig. 285.*)*

These men were followed by Raphael and Giulio Romano, painters as well as architects, who pared down the style of the cinquecentisti to one of greater severity; but Michael Angelo introduced the first elements of confusion. He took complete columns, Corinthian or Ionic, with their entablatures, &c., for supports of a cornice and pediment above a window; and the only good he effected, in accordance with good taste, was the introduction of a rich cornice, as a final crown to a building; a feature which Gothic architects never understood, and which was but very meagre with the cinquecentisti.

A richer style followed this, but in which windows were again more properly treated, and of which a fair idea may be formed from the sketch (*fig. 286.*) of a window from the Palazzo Medici, Rome.

About this time, the first innovation upon the Gothic took place in England, which gradually produced the Elizabethan style, which has been too much studied by every architect to need an example here. But a style produced by the same



285

* I regret that this sketch, and that from the Medici Palace (*fig. 286.*), are too small to show the elegance of the details; and that I did not discover this till it was too late to have them altered.

causes, somewhat earlier, in France, known as “*le goût de la renaissance*,” merits the particular attention of the architect, though unequal in purity to the cinquecento of Italy. The gradual approximation to the Roman in all its features, brought about by the works of San Gallo, Palladio, and others, may be studied by every architect, among the fine seats of our nobility and gentry, of which many belong to that period, and were built by Italian architects.



The last stand in favour of anything approaching to originality and homogeneity of style, in this country, was made by Sir Christopher Wren, who has left several fine works, but few of a domestic character, in which we might study the effect of his style on the windows and entrance doorways of private residences. In France, about the same time, a singular style was produced by similar circumstances, acted upon by different agents, and more especially by Le Brun, the painter. This style has been termed the Louis Quatorze style, and is capable of great richness of decoration, though its ornamental details possess little claim to good taste or distinct meaning: however, it produced a great effect upon the style of this country, after the genius of Wren had ceased to influence the art; and the architecture of the latter part of the reign of William and Mary, and that of the reign of Anne, contained a strong admixture of the taste of the Louis Quatorze. Of this style, specimens of windows, &c., may be seen at Hampton Court; and of the true Louis Quatorze, a good modern imitation may be seen in the façade of Braham's theatre, the design of Mr. Beazeley.

The present period is one of architectural anarchy, and no style can be said to be predominant; in fact, we do not possess a style that can be said to be national, and to characterise the period. A bastard style, which might be termed a sort of Anglo-Romano-Grecian, perhaps takes the lead; but we have imitations of Gothic, imitations of Elizabethan, and imitations of Egyptian, and every other phase of the history of architecture, but no originality. My object has been, by pointing out the proper and natural vehicles for ornament in modern dwellings, and the true principles of adaptation and combination, to lead to the formation of an original style, fitted to the feelings and customs of our present high state of civilisation, in the same way that the following out of similar principles led to the creation of the beautiful cinquecento taste, so perfectly adapted to the state of things that it was devised to embellish.

ART. V. *On the Essentials requisite for the perfect Filtration of Water for domestic Use.* By JOHN ISAAC HAWKINS, Civil Engineer.

(Read to the Mechanical Section of the British Association for the Advancement of Science, at Newcastle, August 25. 1838. Communicated to the *Architectural Magazine* by Mr. Hawkins.)

HAVING forty-five years ago had my attention drawn to the purifying qualities of charcoal, by an account of the discoveries of Lowitz of St. Petersburg, detailed in Crell's *Chemical Journal*, and having repeated many of his experiments, and rendered perfectly sweet and delicious various kinds of putrid meat, fish, game, &c., I frequently related the results to my friends; among whom, the late Mr. Raphael Peale of Philadelphia entered enthusiastically into the subject; and proposed to let water percolate through a stratum of charcoal, in order to separate any putrid substances which might be suspended in it. I joined him and his brother Rembrandt Peale in numerous experiments on this interesting subject; and we called together, nearly forty years since, by advertisement, about 500 merchants and captains, of various nations, in the Exchange Coffee-House of Philadelphia, to whom we exhibited various means by which they could command pure water in almost all situations.

From that period, I tried hundreds of experiments, in order to ascertain the best modes of filtration, both on a small scale for domestic use, and on large filtering ponds for manufacturing purposes; and discovered a number of critical points upon which success depends.

I deem it my duty to lay the results of my very long experience before the public, and therefore beg permission to make this Section the medium of communication. My principal aim at present is, to show how people can, in almost all situations, help themselves to the means of obtaining pure water fit for drinking; and thus I shall incidentally instruct the numerous manufacturers of domestic water-filters, in the essentials requisite for rendering their filters perfect and durable; and many of them, I lament to observe, stand greatly in need of instruction.

It is essential to have the charcoal well burnt: this is best effected in large iron cylinders or retorts, as practised in the manufacture of gunpowder.

A small quantity of imperfectly burnt charcoal may be amended, by being put into a common fire, and made thoroughly red hot, and then extinguished by being covered up in a close vessel.

Clean sawdust of wood, in a sufficient quantity for preparing a small filter, may be burnt in an iron pot, loosely covered, the lower part of the sides of the pot being made red hot, and con-

tinued in that state, until all the sawdust has attained to a red heat; then covered up closely till cold.

This mode of obtaining charcoal for a single filter, is the most convenient, inasmuch as it requires neither pounding, grinding, nor sifting. Thus a very disagreeable annoyance from the black dust is avoided.

It is essential, after the charcoal is burnt, that it be kept from exposure to the atmosphere, because it greedily absorbs any putrid effluvia floating in the air; and thus its power of clarifying water is destroyed.

Charcoal which has been much exposed to the air, before being placed in a filter, will never make the water perfectly clear, but will leave it of an opalescent or slightly milky hue. If the charcoal be pulverised as soon as burnt, or if it be burnt from sawdust, and immediately covered with water, it will keep good for years. The test for its being well burnt is, that, when pulverised, it sinks quickly in water. All that floats must be rejected, as tending to ruin the filter.

It is essential that the charcoal, when pulverised, be free from impalpable powder, yet that the particles be fine enough, and the mass sufficiently compact, to prevent a too rapid flow of the water for perfect clarification. All the dust that will pass through a sieve of 50 meshes in width to the inch, must be rejected.

It is essential that the charcoal be supported upon a perforated material, indestructible by contact with water and charcoal. The most appropriate support is a plate of burnt clay, in which numerous holes, one hundredth of an inch in diameter, are made.

It is essential that the charcoal be covered by some material that will protect it from disturbance by the pouring in of the water. This is well effected by plates of burnt clay, similar to the supporting plates, securely cemented down upon the charcoal.

In order to prevent others losing their time in useless experiments, it may be well to mention, that, before I hit upon the perforated plates of burnt clay, I used a great variety of supporting and covering substances.

1. Two or three layers of flannel upon the bottom of a vessel having numerous holes about one eighth of an inch in diameter, and two or three layers of flannel on the top of the charcoal, the flannel kept down by a plate similarly perforated as the bottom.
2. Silk, which became rotten in about nine months.
3. Flannel, which lasted only three months.
4. Linen, which lasted only six weeks.
5. Horsehair cloth, which became offensively putrid in three weeks. These substances were supported and covered with plates, having perforations of about one eighth of an inch diameter, as in the case of the flannel.
6. Perforated sheets of lead, which became coated with a thick crust of white lead in six months, thus poisoning the water intended to be

purified. 7. Perforated sheets of tin-foil, which became corroded through in three months. 8. Perforated sheets of tinned iron, which were destroyed by rust in a year. Pewter vessels, with perforated bottoms, lasted some years, but were sensibly corroded in a few months.

Having given a very condensed statement of the principal essentials, a statement commensurate with the time of the section, and not by any means with the importance of the subject, I conclude by showing how people, in almost all situations, may help themselves to a good water-filter.

For the simplest and most accessible mode, take a deep garden pot, or other vessel having one or more apertures at the bottom; support it on a brick, stone, or wooden frame, high enough to admit a pitcher to stand under it.

Put in a single layer of clean pebbles, larger than the hole or holes in the bottom of the vessel, suppose pebble of about 1 in. in diameter; on them lay a thin stratum of pebbles of about a quarter of an inch in diameter; and on these a layer of one sixteenth of an inch; on these a stratum of coarse sand. Thus will a complete support for powdered charcoal be formed, and need not occupy more than an inch and a half of the depth of the vessel.

Procure some pieces of charcoal, well burnt, of about one or two inches in diameter; make them red hot in a common fire, keeping them there a few minutes that the heat may penetrate to the middle of the pieces; take them out of the fire, and cover them from the air till cold. Larger pieces would not readily be heated to the middle, and smaller would have too great a proportion converted to ashes. Brush away the ashes, and pound the charcoal in a mortar, or upon a flat stone or a board, until it is small enough to enter a coffee or malt mill. Grind it to the ordinary degree of coarse coffee or fine malt. If no such mills are at hand, the pounding may be continued until the greater part of the charcoal is reduced to about the degree of fineness which the mills would afford.

Then, all that will pass through a common horsehair sieve, or a wire sieve of about 16 meshes in the width of an inch, and will be retained by a lawn sieve of medium fineness, or a wire sieve of 50 meshes to the inch, will be in a fit state for the filter.

Lay upon the bed of sand, before described, 3, 4, or 5 inches deep of this sifted charcoal, previously wetted; ram it down tightly; lay a piece of linen, flannel, or other permeable temporary covering, on the surface of the charcoal, and pour water on it to the depth of half an inch. If that water all runs through in less than 15 minutes, ram the charcoal again, repeating alternately the operations of pouring on water and of ramming, until about 2 in. depth of water per hour, will pass through. Remove the linen or other perishable covering, and then lay on

a thin stratum of the finest part of the charcoal retained in the coarser sieve, and upon that a stratum of the coarser charcoal, no pieces exceeding the size of cherry stones; lay a thin stratum of pebbles of about one sixteenth of an inch in diameter; on these a layer of pebbles a quarter of an inch; and on them a final layer of pebbles about an inch in diameter, deep enough to form a cover not to be disturbed by the pouring in of the water.

Thus will be prepared, by means in almost every person's reach, in every situation, a water-filter as perfect as can be made, as far as the use is concerned.

If portability be an object, perforated plates of burnt clay should be obtained, and cemented into the bottom of the vessel and upon the top of the charcoal.

Thus would be formed a filter, differing only in respect to figure and ornament from the best filters offered for sale.

If proper sieves cannot be obtained, a substitute may be made by spreading the pounded charcoal over a flat stone or table, and scraping the charcoal to one end or side of the table, by a straight rule, around the ends of which a piece of thick paper or thin card is tied, so as to keep the ruler about a hundredth part of an inch above the table. This will leave all the impalpable powder and fine dust unscraped away, which may be then swept off and rejected as not only useless, but injurious in being too fine to allow of free percolation.

Then bind an additional thickness of paper or card on each end of the rule, so as to raise it about one twentieth of an inch above the table, and with it scrape the charcoal back over the table to the other end, when all that remains unscraped will be fit for use. The rest to be again alternately pounded and scraped over the table, until a sufficient quantity is obtained.

Some of the portable water-filter makers place a stratum of sand upon the charcoal, with the view of arresting the grosser particles of dirt in the water. This is a great blunder; since the minute interstices between the particles of sand will be quickly stopped up, and the filter become impervious to water, in one twentieth part of the time that it would take to choke the coarse charcoal, which ought to form the upper surface next below the pebbles or perforated plates.

A layer of sponge is very beneficial to receive the dirty water and retain its grosser impurities; which sponge may usefully be washed once or twice a month, or whenever the filter yields too little water.

Thus will the charcoal, when properly prepared and fixed, continue daily to render water perfectly clear and sweet for years. I have known a filter constantly used for ten years, with the river Thames water, without any renewal of the charcoal.

Thirty years ago I was the only manufacturer of charcoal

water-filters in London, perhaps in the world; and, as I could not sell enough to make the business worth my carrying on, I gave it up to one of my journeymen, Mr. Stone, late of Warwick Street, Golden Square, London, from whom all the present race of filter-makers have sprung.

I rejoice to observe such a numerous progeny, whom I have a right to consider as my grandchildren: and I rejoice, too, in the great extension of the sales, as indicating that mankind are beginning to learn the important fact; a fact very little known when I first offered water-filters for sale, and even now not yet sufficiently appreciated; I mean the fact, that water is a useful article for drink!

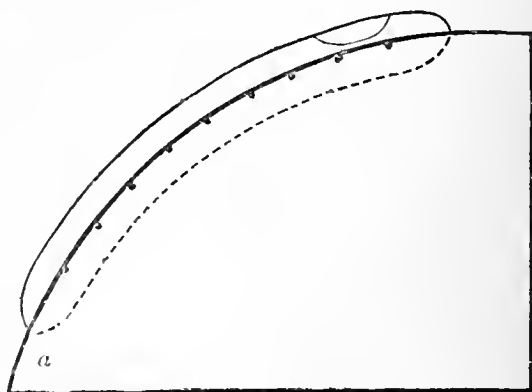
Chase Cottage, Hampstead Road, Nov. 1838.

ART. VI. *Notice of an Instrument to be used in Land-Surveying, for reducing the Length of Lines over undulating Surfaces to the Length of the Base, or level Line.* By RICHARD VARDEN, Architect.

THE instrument which I am about to describe is of considerable service to persons engaged on parish or other large surveys, for allowancing their measuring chain on hilly ground; and, as it is but little known, you may like to have some account of it in the *Architectural Magazine*. It was invented by the late Mr. Webb of Salisbury, a surveyor of eminence, who invented and manufactured many of his own instruments; and his grandson, who made me acquainted with it, continues the use of it, as do several other surveyors in this neighbourhood, all of whom find it of material service. It

consists of a wooden quadrant (*fig. 287.*), 5 in. long and 1 in. thick, let into the curved edge of which is a bent glass tube, nearly filled with spirit, and hermetically closed. The edge of the quadrant is covered with a plate of brass, divided in a manner similar to the scale for ascertaining the difference between a base and hypotenuse line which is on most theodolites. The mode of using it is, to place the bottom, or flat part, on an offset staff, laid parallel with the surface of the ground, the point *a* being towards the ascent. Thus placed, the air bubble in the tube will stand against the figured brass scale, and indicate the number of links that must be added to every chain's length for

287



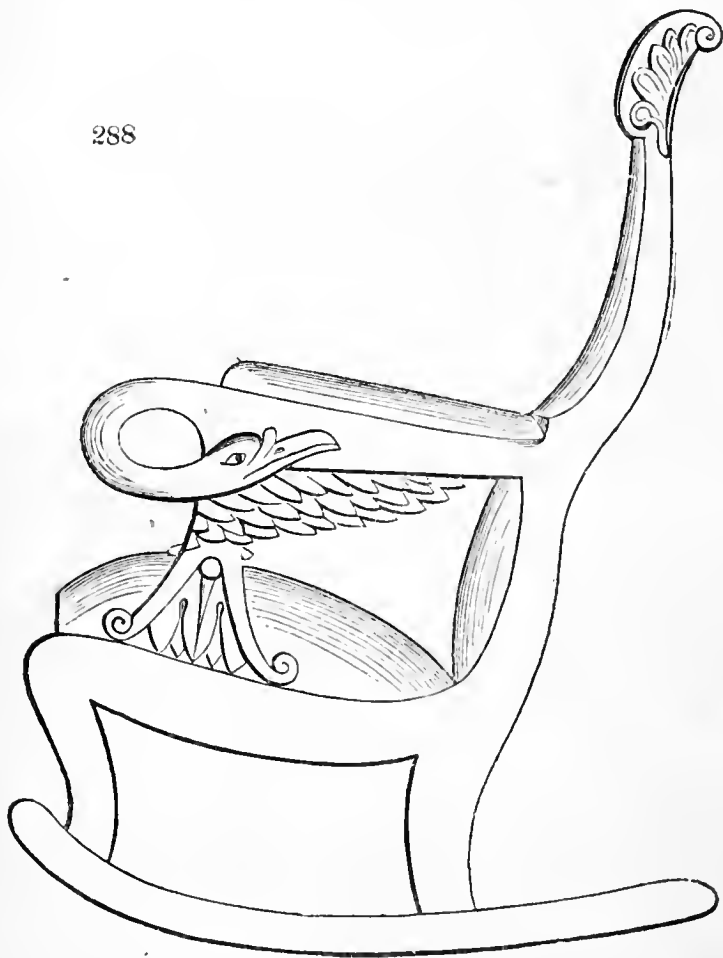
that inclination. This allowance is to reduce the length of lines measured over sloping or undulating ground, to the length of the base, or level line, and is necessary in every survey, as the base of the land, and not the surface, is to be computed.

Worcester, Oct. 19. 1838.

ART. VII. *Notice of Two Rocking-Chairs.* By JAMES FREWIN, Builder.

MR. FREWIN saw these chairs at his friend Colonel J. C. La-ville's, at St. Louis, in the state of Missouri, in the United

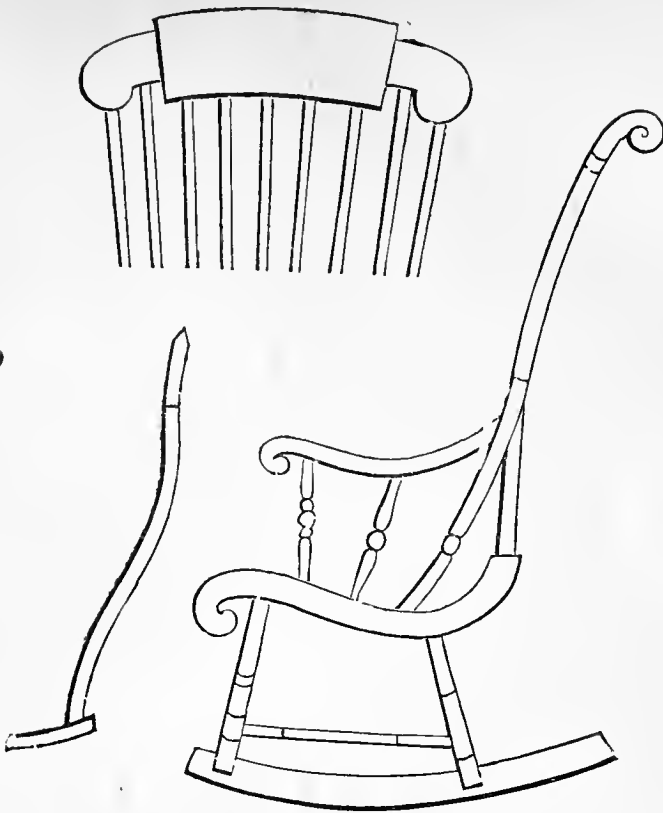
288



States, when on a tour in that country in the summer of 1838 ; and he then made the sketches from which *figs. 288, 289.* have been engraved. The chairs are made just high enough in the back to reach up to the back part of the head of the person sitting in them, so as to enable him to rest his head on it in rocking. The least motion sets the chair going, and the movement is found to be extremely easy and agreeable.

Chairs of this kind are made chiefly at Boston, which is the

289



great emporium for furniture in North America. *Fig. 288.* is made of mahogany, and costs at Boston about 40 dollars, or 8*l.*; but some of this kind are made with more carving, and cost a good deal more. *Fig. 289.* is made of birch, elm, or any more common wood and costs at Boston about 2*l.* 10*s.*

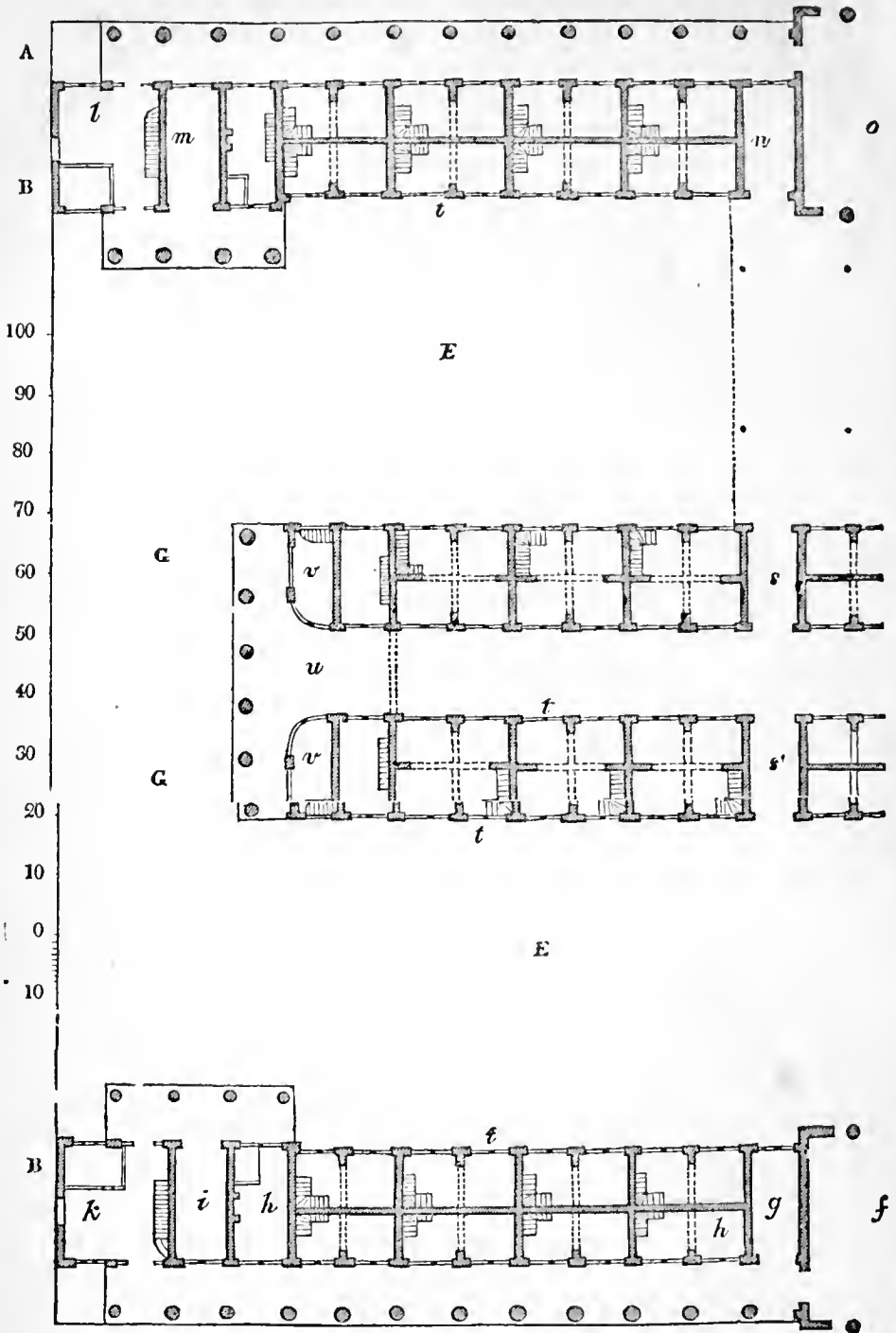
In America it is considered a compliment to give the stranger the rocking-chair as a seat; and when there is more than one kind in the house, the stranger is always presented with the best.

Hertford Road, Kingsland, Aug. 1838.

ART. VIII. *Description of the Market of Covent Garden, London, built from the Designs of Charles Fowler, Architect, F.I.B.A.*
By the CONDUCTOR.

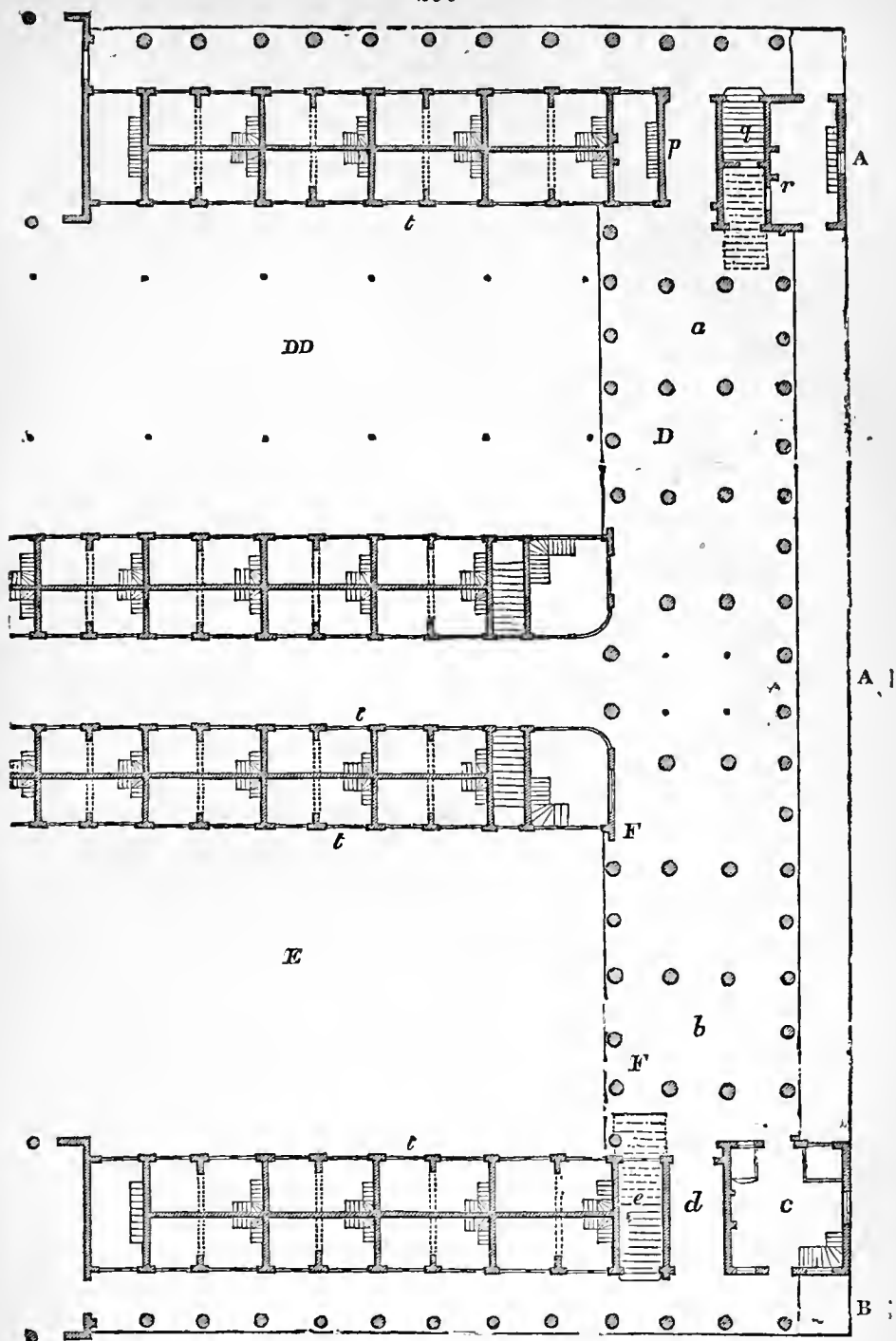
THE market of Covent, or Convent, Garden is so named from its site having been once the garden of a convent. It occupies a space measuring 326 ft. from east to west, and 248 ft. from north to south, and consequently covers nearly two acres of surface. This space, before the present new building was commenced in 1828, was partially covered with open sheds and wooden structures, which had not the slightest pretension to uniformity or any other architectural beauty, further than that most of them were ranged in straight lines from east to west. With the exception of the beauty of the articles

290



- a*, Quadruple colonnade, over which is the conservatory rented by Cormack and Oliver.
b, Quadruple colonnade, over which is the conservatory occupied by Hockley and Bunney.
c, Public house.
d, Passage.
e, South stair to the conservatory.
f, Open casual potato market, or space which may be appropriated to general purposes.
g, Passage.
h, Two public houses.
i, Passage.
k, Seed and herb shop, occupied by Mr. Butler.
l, Seed and herb shop, occupied by Mr. Dickson.
m n, Passages.
o, Open casual fruit-market, or space which may be generally appropriated.
p, Passage.
q, North stair to the conservatories.
r, Wholesale fruit and potato warehouse.

290



s, Passages.

t, Shops and dwellings over.

u, Portico, with terrace over it, for hardy plants.

v, Shops, with rooms over for eating fruit and ices, communicating with terrace over the portico.

A, Area, 12 ft. deep and 9 ft. wide, apportioned in spaces for casualty stands; that is, stands for any grower or dealer, not a regular tenant, who chooses to send articles to market.

B, Cart or waggon stands, 12 ft. deep and 9 ft. wide; taken by the market-gardeners or garden-farmers by the year.

c, Potato stands, 10 ft. wide.

D, Fruit-market. *DD* is roofed over, the roof being supported by iron pillars joined by spandrils.

E, Open pitching stands for vegetables and potatoes, rented by market-gardeners as yearly tenants.

F, Covered pitching stands for fruits and vegetables.

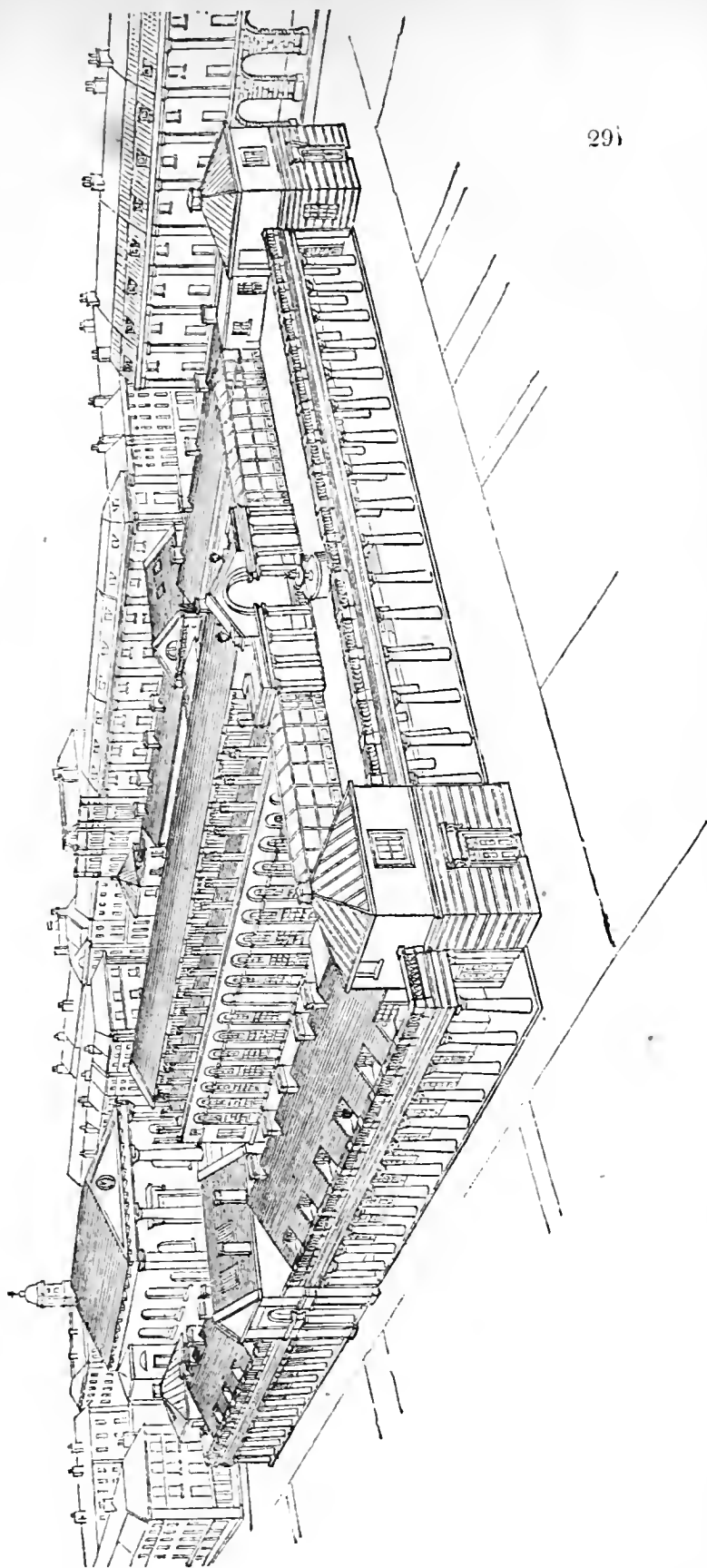
a, Flower-stands for plants in pots, in balls of earth, and for nosegays.

sold, which were at all times the best the country could produce, every thing else had a disorderly appearance; frequently joined to litter, refuse, decaying matters, accompanied by an intolerable stench, and an obvious want of cleanliness. As the population of London increased, and with it the supply of vegetables brought to this market, very considerable inconvenience was experienced, both by sellers and purchasers, from want of room.

Various plans have been suggested for its improvement. We recollect an ironmonger talking of throwing a glass roof over the whole market at the height of 50 ft. from the ground, to be supported on hollow cast-iron pillars; some of which were to serve for the descent of water from the roof, and others for the ascent of smoke from the fireplaces in such living-apartments or shops as might be constructed below. In 1827, a plan was submitted to the Duke of Bedford, as proprietor of the market, by Mr. Fowler, and exhibited at Somerset House in the same year. A model was soon afterwards formed from this plan, and exhibited to all those interested in the market. The ground plan of this design, which was engraved in 1827, exhibits three parallel buildings, each surrounded by an open colonnade. Exterior to the buildings is a space sufficiently wide to allow a row of carts and waggons to arrange themselves, side by side, the horses' heads pointing from the building, without interrupting carriages passing along the street. We understand the chief objection to this plan was the occupation of so much space by the colonnades. In other respects it does not differ essentially from that executed.

In 1827, the Duke of Bedford, having procured an act of parliament for the rebuilding of the market, employed Mr. Fowler as its architect; and by the suggestions of Mr. Charlwood, who was employed to arrange the ground plan, distribution, and appropriations of the different departments of the market, the plan of Mr. Fowler was altered till it assumed the form of that about to be described. (*fig.* 291.)

Approaching from the east, the chief feature is the quadruple colonnade (*figs.* 290. and 292. *a*), with the conservatories over. In the central building is a passage 16 ft. wide (*t t u*), open to the roof, and on each side a range of fruit-shops, forced articles, and the more choice culinary vegetables and herbs. Each shop has a cellar under and a room over it, with a trap-door to the former and a small staircase to the latter. There are two exterior colonnades on the north and south sides (*B A C C*), which serve as passages in front of the shops. The shops on the north side are for different descriptions of culinary vegetables and the commoner fruits, and those on the south side are exclusively for potatoes and the commoner roots. The half of one of the areas (*D D*) is covered with a roof in three parts, open at the



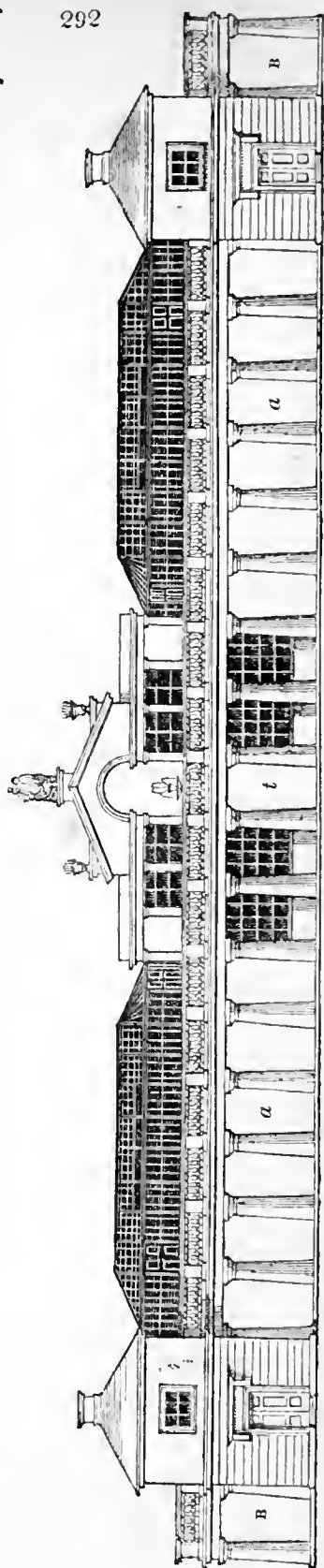
291

Perspective View of the Market of Covent Garden.

sides for ventilation and light; the roof is supported by cast-iron pillars, from which spring circular ribs, instead of horizontal tie-beams; and the result is a very light appearance. Under it is held the wholesale fruit-market, and below the surface are fruit-cellars. The open space (F F D) under the quadruple colonnade is occupied at one end as a fruit-market, and at the other with stands for fruits and vegetables.

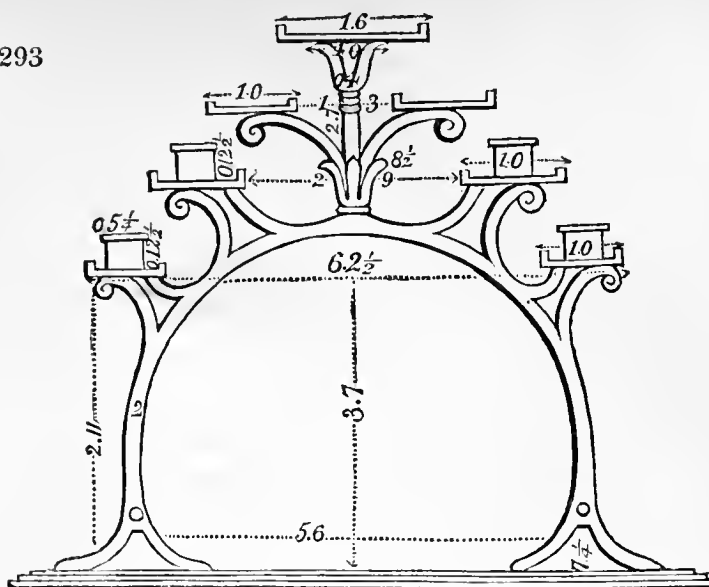
The ascent to the conservatories over this open colonnade is by four staircases, two from the central passage (*unt*), and one from the end (*eq*) of each of the exterior colonnades. The framework of the conservatories is wholly of cast iron and copper, even to the shelves of the stage (*fig. 293.*); and the work is executed with remarkable neatness, by Messrs. John Jones and Co. of Birmingham. The conservatories are 15 ft. broad, and 15 ft. high: they do not occupy more than a third of the area of the terrace, and the remaining part serves as a promenade, and for the display of hardy plants in pots and vases, and other garden ornaments. In the centre of the terrace is a handsome fountain (*fig. 294.*), designed by Mr. Fowler, and executed in Devonshire marble, highly polished: the machinery was furnished by Messrs. Braithwaite. The water is supplied from a cistern, or rather a series of connected cisterns, placed immediately under the roof of the grand central passage. Adjoining each conservatory, and in the occupation of the same tenant, is a small room devoted to books, plans, models, and other new or interesting objects connected with agriculture or gardening, and also an office or counting-room and other conveniences. One of the conservatories is occupied by Messrs. Cormack and Oliver, nursery and seedsmen, of New Cross, near Deptford; the other by Messrs. Hockley and Bunney, nursery and seedsmen, Kingsland Road.

292



East Elevation of the Market of Covent Garden.

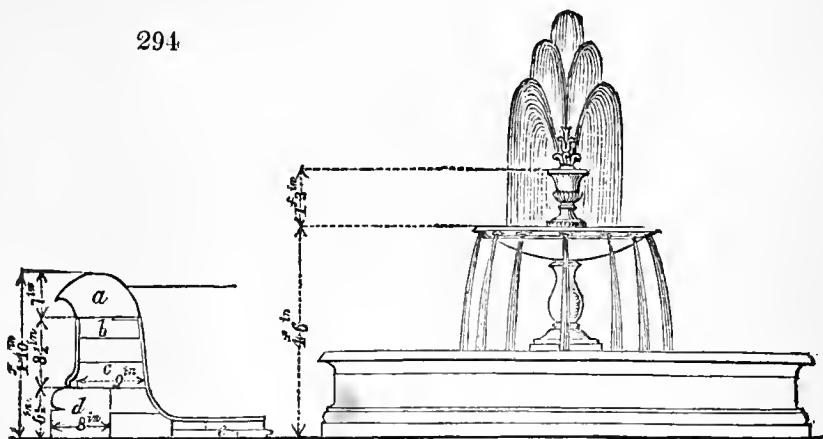
293



There are cellars below all the fruit-markets, under all the buildings and pathways, and continued through one side of the long market (E E), for storing up potatoes. There are rooms over all the shops, used partly as store-places and partly as bedrooms.

Both the open and covered markets are inaccessible by carts and waggons. There are circular openings or manholes, 2 ft. in diameter, in the floor of the long market (E E), which communicate with the cellars, and through which the potatoes are shot down; and there are openings by trapdoors to the

294



cellars of the fruit-market for similar purposes. The openings by which the potatoes are brought up from the cellars are within the buildings. There are also cellars for washing the potatoes, and water is laid on for this purpose, as well as for general uses, throughout the whole of the buildings. The supply is obtained from an Artesian well, sunk beneath the central path to the depth of 280 ft., which affords 1600 gallons per hour, a quantity greatly exceeding any occasion that can be expected to arise. A small steam-engine, on Braithwaite's most improved principles,

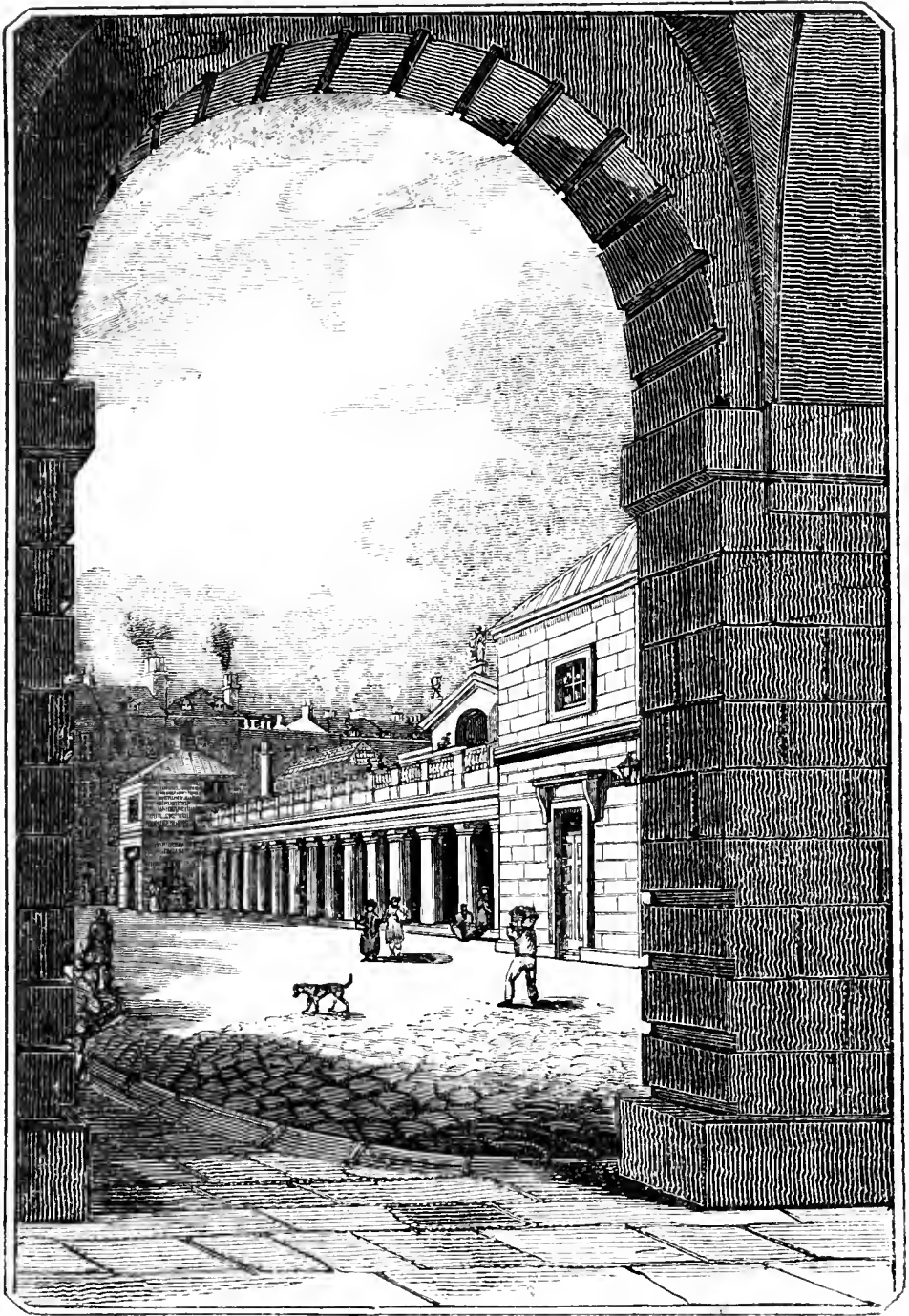
has been erected, to distribute the water over the higher parts of the buildings, and the whole area of the markets; and, more especially, to supply the handsome fountain before mentioned, on the terrace in front of the conservatories. In the centre of the market there is an apparatus, by attaching hose to which the whole surface of the market can be washed and effectually cleaned in a few minutes. By the same means, also, fire may be instantaneously extinguished. The central passage (*utt*), the exterior colonnades, and every other exterior part, independently of the interior of the shops, are lighted by gas.

The exterior walls of the shops, cellars, &c., are of brick, faced in conspicuous situations with Yorkshire freestone. The columns are of Scotch and Devonshire granite, the shafts being of one stone each. The paving of the passages is partly of granite and partly of Yorkshire stone. The open and covered markets (E and DD) are causewayed with granite, in the manner of the best street paving. The terrace over the quadruple colonnade is composed of large slabs of stone, which form at once the floor of the terrace and the ceiling of the colonnade. From the terrace the water is drained into hollow cast-iron beams, on which the stones rest. These are supported chiefly by granite columns; but in the centre compartment, indicated between D and F, some are of cast iron, for the purpose of obtaining more light and space directly in front of the central passage. The exterior passages, including the shops, are covered with slate and zinc. The whole was admirably executed by Mr. William Cubitt, of Gray's Inn Road, by contract. The work was begun in September, 1828, and finished in May, 1830. It raised Mr. Fowler to the very first rank as an architect; and confirmed, if confirmation were necessary, the high opinion every one entertained of the skill, integrity, and honour of the contractor.

The conservatories are heated in a new and very ingenious manner by hot water or by steam, at pleasure, according to a plan devised and executed under the direction of Mr. Colling, a very ingenious engineer.

The appearance of the market is on every side highly architectural, though the accompanying perspective view of the east front (*fig. 295.*), copied from one obligingly lent us by Mr. Fowler, is too small to give any adequate idea of the elegance of the design.

To walk through this market, with the recollection of what it was ten years ago, gives rise to a variety of reflections. By what cause has it come to pass, that the pillared grandeur and temple-like magnificence, which in former and no distant times were exclusively devoted to the edifices consecrated to the gods or occupied by princes, are now judged appropriate to the scene



Perspective View of the East Front of the Market of Covent Garden.

of humble industry and the abode of every-day people? Is this change merely attributable to the accidental circumstance of an individual being at once rich, patriotic, and a man of taste; or is it the result of any general principle in constant operation?

In the days of the Grecian republics there were no magnificent buildings but the temples, and those were erected at the general expense. The Roman emperors built sumptuous palaces, and some of their favourites had magnificent country villas. All these

were, in process of time, destroyed by the inroads of hardy barbarians, who easily overcame the effeminate Romans, because the Roman empire had then no foundation in moral strength. In the dark ages which succeeded, the only magnificent buildings erected were churches, convents, kings' palaces, and castles, or rather fortresses. Almost all other structures were temporary hovels, till the establishment, by degrees, of commercial towns; first in Italy, and afterwards in Portugal, Holland, Germany, France, and England. These towns constituted a new power in society, and gave birth to that principle of modern commerce, or, in other words, of civilisation, which has since gradually developed itself, and produced, in towns and cities, market-places, piers, quays, exchanges, and other public buildings. These erections were at first merely useful, but by degrees were constructed so as to combine beauty and character with the requisite convenience. As commercial towns and cities increased, churches, convents, palaces, and fortified castles diminished; the architectural splendour of the latter being gradually transferred to the former. Wealth, which had heretofore consisted chiefly in the possession of lands and vassals, now began to accumulate in the coffers of commercial men; and these, like the others, naturally sought to employ their riches in buildings calculated to further their own pursuits. Such have been the effects of the principles of commerce, or civilisation. It might easily be shown that the continued operation of this principle, aided, as it soon will be, by the general diffusion of useful knowledge and rational taste, will end in almost the only magnificent buildings being public ones, and in the total disappearance of temporary hovels, whether as commercial or agricultural structures or private dwellings, and of palaces and castles, except as ruins. No cathedrals and convents, and but few private castles and palaces, similar to those of Europe, will ever be erected in America; but such market-places, colleges for education, parochial institutions, and public gardens, will be erected and laid out in that rising country as it accumulates wealth, as, in point of real grandeur and beauty, founded on utility, have never yet been surpassed. We shall not, however, permit ourselves here to indulge in such speculations.

As contemporaneous buildings of the same class as Covent Garden Market, we may notice some other very handsome erections in foreign countries, the work of the end of the last or the commencement of the present century. The first are the bazaars of Moscow and Petersburg, which are large quadrangular buildings, enclosing an open square used as a market, and surrounded exteriorly with open colonnades or arcades like those on the north and south sides of Covent Garden Market: and under these colonnades are shops with rooms over, exactly

like those which have been described as having been formed in Covent Garden. The Exchange of St. Petersburg is also a remarkably handsome building, only surpassed by that of Paris, which is the handsomest work of the kind, we believe, on the Continent. The only commercial building in London which ranked with these, previously to the commencement of the present century, was Gresham's Royal Exchange; the work of an individual; and as great an effort, relatively to the times in which it was produced, as is the Covent Garden Market erected by the Duke of Bedford to the present era. Another building which, it might be supposed, would challenge competition with the magnificent foreign structures we have just alluded to, is the Bank of England. We know not what the interior of this structure may be; but the exterior, designed, we believe, by at least two architects reputed to be at the head of their profession, has always struck us as a singularly unfortunate display of architectural design. Columns, which, to be grand and imposing, ought always to be, or to appear to be, essential component parts of an edifice, are here reduced to mere ornaments. They abound to such an extent as to destroy simplicity, as well as grandeur of character; and, frittered down by petty projections in the entablature, interspersed with blank doors and windows in some places, and crowned with cinereal urns in others, produce so anomalous an effect, that a stranger walking round, and inspecting the different fronts, would be puzzled to conjecture the purpose of the huge pile. Viewing it from the north-west angle, it might well be taken for a metropolitan sepulchre; from the west side, a prison; from the north side, the walls and gates of a timber-yard; from the east, a stable-yard; and as to the south front, whoever has seen the Campo Morto at Pisa must be struck with the resemblance. Very different, indeed, is the new Post-Office, which, at once simple and grand as an architectural pile, conveys, as to character, exclusively the idea of public business. Covent Garden Market is also a structure at once perfectly fitted for its various uses; of great architectural beauty and elegance; and so expressive of the purposes for which it is erected, that it cannot by any possibility be mistaken for anything else than what it is.

Covent Garden Market, we hope, may be considered as the commencement of a new school in architecture; and this school we should wish to distinguish as that of Reason and Progression, in contradistinction to the prevailing school, which may be denominated the School of Authority, or the Stationary School. The architects of the Bank of England clearly belonged to the latter school, and the architect of Covent Garden Market, of the Hungerford Market, of the Exeter Meat and Corn Market, and of the Botanic Conservatory at Syon House, as clearly

to the former. The School of Authority considers nothing as architecture, for which some precedent may not be found in the buildings of the Greeks and Romans; and nothing legitimate in that architecture, which cannot be subjected to the rules of one or other of the five orders. Hence the buildings usually denominated Gothic are rejected by the more rigid disciples of this school, as not belonging to architecture at all; much in the same manner that some sects of Christians deny that the religion of Mahomet is entitled to be denominated a religion. Bigotry and intolerance exist in the arts and sciences, as well as in philosophy and morals; and in no arts have they been more influential in retarding improvement than in architecture and agriculture. In agriculture, we have lawyers and land stewards insisting on the insertion, in agricultural leases, of the same clauses respecting culture and management which were in use three centuries ago, when farmers were little better than cattle, yoked and driven by their landlords. In architecture, we have architects contending for forms and proportions calculated exclusively for a particular purpose and a particular climate, in a state of society as different from the present as darkness is from light. Nothing, however, exists for which there is not a cause, and that cause founded in nature. Things are chiefly good or bad relatively to circumstances.

The Stationary Schools, both of agriculture and architecture, were very good schools when mankind were in more danger of retrograding in arts and civilisation than of advancing. Where all are not enlightened, the many must always be led by the few; these few, whether in politics or in the arts and sciences, form the Stationary School; and the principle of self-preservation will render that school jealous of its power, and consequently, adverse to all innovation or interference. There is, however, no Stationary School in nature; and, taking a general view of past ages, mankind have always been progressing, however slowly, towards something better. In modern times, the ratio of this progress has greatly increased, and the School of Reason is now everywhere in conflict with the School of Authority. The first grand shock which the School of Authority in agriculture received was the introduction of clover, turnips, and the artificial herbage plants, into field culture: the first assault upon the Stationary School of architecture was the employment of cast-iron; first in bridges, and afterwards in houses, gates, and fences. A cast-iron bridge is an abomination to the Stationary School of architects; and what is called an open lease is the same to the Stationary School of land stewards.

The reader may trace for himself the progress of the conflict between the Stationary and Progressive Schools in both arts; we shall confine ourselves to stating that Mr. Fowler is one of

the few modern architects who belong to the School of Reason, and who design buildings on fundamental principles, instead of antiquated rules and precedents. In designing Covent Garden Market, his first object was to produce all the accommodation and conveniences which such a market required, or was susceptible of receiving from modern improvement in the arts subordinate to architecture; his next object was, to make choice of the most suitable materials for executing his design, so as to combine strength and durability with moderation in the expense; and his third object was, to compose the forms, arrangement, and materials, in such a manner as to produce as high a degree of architectural beauty as was consistent with the other objects. In searching for this architectural beauty, he did not confine himself to the architecture of any age or country, much less to any particular order in the Grecian or Roman Schools; but, adopting unity of expression as a whole, and symmetry, regularity, and connexion of the parts of that whole, as fundamental principles common to all architecture whatever, past, present, or to come, he drew from all that he found already existing, and from his own imagination, what best suited his purpose. How admirably he has succeeded in producing a whole of great architectural beauty, and perfectly suited to every required purpose, may safely be left to every unprejudiced observer to determine.*

ART. IX. *Fragments connected with Architecture and the Arts, from a Provincial Tour.* By HENRY NOEL HUMPHREYS.

RAILWAYS AND RAILWAY ARCHITECTURE.

ON arriving at the terminus of the London and Birmingham railway in Euston Square, the traveller is at once impressed with a great idea of the importance of this wonderful national work, by the imposing aspect of the entrance. This massive piece of architecture is in the Grecian Doric style, displaying little invention in the design; and yet the general effect is sufficiently imposing to demonstrate the full truth of the axiom, that magnitude alone forms a principal ingredient in architectural grandeur. The columns are 8 ft. in diameter and about 40 ft. high; dimensions not to be rivalled, I believe, by those of any modern building in the style. Yet how vastly surpassed by the stupendous works of the early Greeks; and if these proportions are sufficient to impress the mind with feelings of wonder and admiration, let the

* To complete the symmetry of the building, a colonnade and terrace are wanted at the west end, similar to those at the east end; and a roof over part of the potato-market, similar to that over part of the fruit-market: but these were contemplated in the original plan, and will no doubt be executed in due time.

beholder imagine, if he has not seen, one of the great Sicilian temples in this same style, of which, in common with those of Attica, they are the original models; and picture to himself the effect produced. The temple of Jupiter, for instance, at Agrigentum, nearly doubles the proportions of this massive gateway, the diameter of the columns being 13 ft., in the flutings of which a man may stand concealed. Standing beneath this noble railway entrance, let the spectator suppose its vast columns nearly doubled in magnitude, and he will thus, if he has not seen them, be able to present to his imagination a vivid picture of those stupendous works of ancient art, when they existed in all their splendour and newness.

I have contrasted the gateway with the works which served it for models, and found it shrink in the comparison. The great work, however, to which it serves but as an introduction, need fear no such ordeal; for the railways of our day stand unrivalled in the history of the world, as monuments of human science, power, and perseverance. The guide-book, happily enough, terms it a truly Roman work, carried on and completed with Roman perseverance. But it is a more than Roman work; for, without entering at first upon less direct points of comparison, it is simply and at once a work far surpassing in extent any artificial road or means of communication ever effected by that wonderful people. I am, of course, now speaking of the whole line from London to Liverpool. Their aqueducts approach nearer in extent, enterprise, and expense, than any other of their works, to the labours of a modern railway. These, as it is well known, were common all over the empire: but those at Rome itself were the greatest, both in extent and splendour; some of them conveying water from a distance of forty miles to the centre of Rome. A spring of pure, or peculiarly limpid, water was no sooner noticed among the hills that on three sides gird the wide plain in the centre of which stands, still stands, Rome, than an emperor, or perhaps a wealthy citizen, was found to exclaim, "I will convey it to the city." Canals and tunnels were cut through the solid rock of the mountain, regardless of labour, expense, time, or the unexpected oppositions of Nature herself; brought to the foot of the hills, this prized element was conveyed a distance of from fourteen to twenty miles across the plain, by means of an aqueduct supported upon arches of stone, highly finished with architectural embellishments, and frequently enriched with a profusion of statuary. Two of these wondrous works are still sufficiently perfect to fulfil their original purpose, and still supply the eternal city with water. But what are these works to the great railway that connects the ports of London and Liverpool, and, by the aid of science, annihilates the intervening space of 200 miles by which they are separated. This work, with its bridges, tunnels, viaducts,

excavations, and embankments, immeasurably surpasses the most extensive aqueduct of the Romans; while the greatest tunnel excavated by them or their predecessors, with which we are acquainted, the Grotto of Pausilippo at Naples, is surpassed by the single work at Primrose Hill. In mere extent it is a more than Roman work. There are other considerations. How were the great works of the power of Rome produced? They were the work of slaves. Titus employed 40,000 Jewish prisoners, the victims of an unjust war, condemned to eternal slavery, to build the Coliseum; all the great works were the product either of domestic slaves, or of the victims of unjust wars; they were produced by oppression and unrewarded toil. Our great railways, on the contrary, have been the means of dispensing food and comforts and instruction to the remotest homes of a population of free labourers. . . .

The entrance to the great tunnel under Primrose Hill, the first on the line, is conceived in the right feeling, presenting exactly the effect required. On entering this subterranean road, bored through the very heart of the hill, whose superincumbent weight seems ready to overwhelm and crush in any work of less than cyclopean strength; it was necessary to reassure the timid traveller by such a parade of strength as is well expressed in the design of this entrance, every feature of which conveys the idea of force and stability. This, and all the other architectural works on the Birmingham line, are the designs, not of an architect, but of an engineer; the engineer of the Birmingham line, Mr. Stephenson; whilst the terminus at Euston Square is the work of a professed architect. Here we see, in strong contrast, the work of a man guided alone by the great principle of good taste, fitness; and that of a man in the leading strings of the five orders. The terminus is a work called into existence by the study of Grecian temples, with little in its design that fits it peculiarly for its locality and purpose. The entrance to the tunnel, on the contrary, has received its form and proportions by the inspirations alone of place and purpose, which, in the hands of genius, must ever produce works more in accordance with the true principles of taste, which are in fact those of fitness. We plunge beneath the lofty arch of this noble passage, which is rather a gallery than a tunnel. What we should call tunnels, on the famous road of the Simplon, were, by the engineers of Napoleon, termed galleries; and here is a work, the extent of which entitles it much more strongly to the name. . . .

Here * we enter an excavation through a stratum of compact blue stone, of more than a mile in length, whilst the depth often exceeds 50 ft. In augmentation of the vast labour required to

* At Roade.

such a work, it was found, before the required level was attained, that this stratum of rock rested upon one of clay insufficient for its support, so that an artificial foundation had to be formed; and, throughout great part of the extent, the rock is underpinned with solid masonry. What are the Roman cuttings at Terni or the Lago di Narni to this?

CANALS AND RAILWAYS.

. . . . We now pass through a short tunnel which carries us beneath the London road, just beneath the Weedon barracks, and soon after above the canal. Canals, some eighty or a hundred years ago, were making a similar sensation through the country to that made by the railways now; and it was probably a still greater step for the period. The Duke of Bridgewater, and other promoters of that mode of conveyance, were considered then as wild schemers as the railway promoters ten years ago. The canals cut their way through the heart of the country much in the same way as that in which I have been attempting to describe the course of the railways; and in their various lines influencing the destiny of districts, and calling into importance places hitherto doomed to obscurity. But their lines were less boldly taken, avoiding anything like a tunnel or excavation of any length, and therefore often circuitous. Where a rise could not be avoided, the ingenious, but somewhat cumbrous invention, the lock, was resorted to, which, besides loss of time, increased by tolls the expenses, of transit. Nevertheless the system was an amazing improvement upon waggon carriage by the villanous roads of that day, being far more expeditious as well as more economical. But the moral influence produced by canal lines, upon the districts through which they passed, was very different from that produced by railways. The boats were conducted by a low set of fellows, demoralising and disturbing the inhabitants along their route. Indeed, in many cases, the towing pathway of the canal was proverbially a scene of depredation, and dangerous to pass by unprotected individuals; whilst the boats carried little except heavy merchandise, only influential in a commercial point of view. How different is likely to be the moral influence of a great railway! A strict police is maintained along the whole extent of the line, thus adding to the security, instead of disturbing the repose and morals, of the country; and, instead of being confined to the carriage of heavy merchandise, cargoes of intelligent passengers, many of the best educated classes of society, are carried along these lines, and deposited at the various stations, bringing with them money and intelligence, and spreading civilisation widely over the face of the country. The influence of canalling upon the arts was, if more harmless than its moral effects, far from producing any improvements, as may easily be seen by a very cursory glance at the bridges and other works on the lines; whilst railways promise to give quite a new

and original impetus to architecture. Such are the different results of works carried on at different stages of civilisation. . . .

RAILWAY ARCHITECTURE.

The Kilsby tunnel is the longest on the line, being 2400 ft. in length. The expense of construction, from the unfavourable nature of the soil, was enormous; nearly doubling the original general estimate, which was 20*l.* a foot for the small tunnels, and 30*l.* for the long tunnels. The entrance is a copy of the gateway of a feudal castle, or fortified town, which, considering the relative proportions, must be considered a happily selected model. The machicolations form a good architectural feature, reduced to trusses supporting the cornice; yet, on the whole, I should perhaps have preferred a completely original design; at all events, I venture to pronounce the execution of the idea as too meagre, and failing to convey that sentiment of enormous strength which is at once inspired by the design at Primrose Hill. It is, in fact, beneath its model; at least such a model as might have been selected from numbers still in good preservation. Take, for instance, the one at Carisbrook, or the old gate at Winchester, or fifty others I could name, which, by lowering the height of the proportion, would have made splendidly massive railway entrances. The one in question appears, from its circular arch, and the style of the machicolations, to have had an Italian model; and, though I am a staunch advocate for the study of the Italian Gothic, which has been so strangely neglected by the majority of our architects, yet I do not think its adoption felicitous upon the present occasion. It wants the massiveness of the northern style, and its comparative lightness is felt unfavourably in such a situation as this. The transit through this great tunnel is twice enlivened and lighted by two vast shafts to the surface, upon a scale so grand, that they appear rather the vaulting cupolas of an immense cathedral, than the mere shafts for lighting and ventilating a railway tunnel. The light admitted through the apparently small aperture at the top produces a fine effect, as it descends, irradiating from a single point, over the vast surface of the vault, and struggling, as it advances, with apparent darkness, till it is eventually lost in the black depth below, through which we pass, but pass too rapidly to appreciate all the sublimity of the effect. I was reminded of the *Sette Sale*, as they are vulgarly termed at Rome, those stupendous head-quarters of the vast sewerage of the ancient city, which are perhaps its greatest wonder. As the work of the empire with its universal dominion and limitless power, they would have been a great work; but as the effort of a Tarquin, ruler of a kingdom no larger than a petty German principality of our day, at war with all its neighbours, they were indeed a stupendous undertaking, and were alone suf-

ficient to stamp the people who effected it with the signet of power and empire. These reflections suggest to me that the vomitory of the Cloaca maxima would form a capital model for a tunnel entrance; and, made to pierce a massive wall of what is termed cyclopean structure, would convey a noble impression of ponderous strength. I am astonished that the cyclopean walls have not been imitated in some of our railway structures; the style is quite in poetic accordance with the vastness of these stupendous works. What a text to compose upon is presented in the well-known Gate of Lions at Messene; a model teeming with strength, and frowning majesty in its noble rudeness. . . .

. . . The Brandon skew bridge is a most finished piece of brick-work. It has an angle of 28 degrees, its span is 76 ft., and it rises in the centre but 7 ft. 6 in. The railways have done more to advance the scientific part of architecture, than a century without such advantages would have effected. Before the projection of these great works, the erection of a bridge or a viaduct was an event of importance, and might almost be said to mark an era in the history of the art; whilst, in the railroads now in progress, such works may be counted by hundreds instead of units; and the impulse such a call has given to invention and design, as well as constructural skill, is best estimated by the beauty and originality of many of the works. The railway has been as great a boon to the architect as to the merchant and the traveller. . . .

. . . The cuttings through this stratum of red sandstone* are in many parts judiciously left untrimmed; so that we pass through a magnificent avenue of picturesque rocks, which has, in English travelling, a novel and beautiful effect. It reminded me slightly of the passes of the Simplon and St. Gothard. The company have taken advantage of the quarry they have thus been obliged to work, and used a portion of the stone in the construction of various works in this part of the line. . . .

POLYCHROMY.

. . . Across the Beechwood excavation through this solid rock, where upwards of 193,766 cubic yards of stone have been removed, is thrown one of the most beautiful structures of the whole line. It consists of a single arch of 76 ft. span, springing from the natural abutment of the naked rock, to which it is cemented, as it were, by a bold but simple moulding; and the arch being of the same stone as the rock produces a beautiful mingling of art and nature, which is most agreeable to the eye. We now enter the Beechwood tunnel, and here meet with another fine piece of architecture in the entrance. It is in the Egyptian style, the cumbrous proportions of which seem well fitted for such a pur-

* Between Coventry and Birmingham.

pose, particularly in the manner of their adoption in this design, which is simple and good; though, perhaps, the boldness of the string courses have been a little exaggerated, the lower one having a projection of 2 ft. 9 in. But this entrance is more interesting in another point of view, I mean on account of the introduction of a polychromic effect, produced in what I conceive a more legitimate way than by the use of artificial colour; by the employment of materials of various natural colours; the string courses and copings being of a fine bluish grey stone (I should imagine from the Roade excavation), whilst the mass of the structure is of the red stone found upon the spot. The effect produced is varied and agreeable, and the two colours contrast exceedingly well; the effect, indeed, is such, that I feel convinced that, if this method were pursued upon principles of pure taste, so as to vary the effect of a building without rendering it patchy, and to call in colour judiciously to the aid of form, we should soon come to consider a great building all of one colour as monotonous, and entirely wanting in one of the great elements of pictorial effect. We should, I am confident, soon outgrow the prejudice in favour of stone colour; the prejudice which inspired Simon with the idea of white-washing St. Peter's; of covering all the glittering bronze and gilding, and the rare and glowing marbles of that matchless interior, with "a wash of a warm stone colour," to render the effect, to his view, chaste and perfect. . . .

RAILWAY ARCHITECTURE.

. . . Another single arch of the red stone, springing from the bare rock, and perhaps more beautiful than the last, it is upon the skew principle, which, combined with the same circumstances that gave so much interest to the former one, adds a wildness to its beauty, well in keeping with the rocky scenery with which it is connected. If I were building an ornamental bridge, in a similar situation in a park, I would go out of my way to get a skew, particularly if the picturesque formed part of my object.

The Birmingham terminus is in a bold design in the Ionic order, but depends more upon its magnitude than its composition for admiration, though the effect is certainly imposing. . . .

ARCHITECTURE OF BIRMINGHAM.

. . . With the exception of St. Philip's, a building full of faults the period of Sir Christopher Wren, and one or two modern churches and chapels, Birmingham did not, until the building of the town-hall, possess a single building pretending to anything like architectural character, besides the rather pretty façade of

* See his Italian tour.

the theatre; but the increased appreciation of the fine arts in the provinces has made great strides during the last ten years. The annual exhibition of works of art has done much, but not so much as the rapidly increasing facilities of communication with the metropolis. However, the taste for the arts is now considerable; and its gratification, far from confining itself to a shilling view of the exhibition, or even a yearly subscription to the Society of Arts, is shown in the annual purchase of many of the best pictures exhibited; for in the sale-book I observed the registry of several hundred pounds thus devoted to the arts. . . .

The Town-hall, though a grand object, with its 130 Corinthian columns of Anglesea marble, is but a poor composition, indeed no composition at all; it is only so many feet of the order, worked up into an oblong square building: the rusticated basement, which is the only original part, is exceedingly bad. In the interior, all is poverty impoverished; the ceiling is laid out in compartments like a Dutch garden, with its roses and pateras stuck here and there with a scantiness truly distressing, though closely filled up by unmeaning and ineffective borderings; whilst the windows are small, and mean in the extreme. . . .

The Free Grammar School, by Barry, is one of his most successful designs in the Gothic style, and is really beautiful, though much injured by the walkingstick meagreness of a row of pinnacles surmounting the buttresses, which do all they can to destroy the repose and beauty of the building: but they cannot, it is beautiful in spite of them; indeed, the entrance is exquisite, conceived in the true and delicate spirit of the finest era.

There is a chapel in Carr's Lane quite a study in picturesque composition, particularly with such a stubborn medium as the Doric order. It is capitally managed; but description without a sketch would be unavailing.

The great architectural feature in Birmingham, however, is of a domestic character. The cottages and villas of the opulent merchants and manufacturers at Edgbaston are more varied in design, more highly finished for their size, and display more finish and fancy in the gardens and out-door arrangements, than any neighbourhood in the vicinity even of the metropolis. The parish of Edgbaston is principally in the estate of Lord Calthorpe, so that he has been able to exclude houses of a common description, and influence the style of the buildings to a great extent; many of the designs of which are exceedingly chaste and beautiful, whilst others display rather too luxuriant a fancy. A public house, the Plough and Harrow, is the most perfect specimen of Elizabethan, upon a small scale, that I have ever seen. But the great beauty of the dwellings of Edgbaston consists in the perfection in which they are kept up. . . .

. . . Little improvement has taken place in the streets of the town; though I must not omit the good effect produced at many points by the tall chimneys of factories, some of which are most beautiful specimens of brickwork, of incredible height and slenderness. A greater impetus will, however, be given to street improvements, by the proposed opening from the railway station to the centre of the best part of the town in High Street, which is finally agreed upon; and nothing but the decision among several plans furnished, delays the immediate commencement of operations. . . .

COLESHILL CHURCH* AND MAXSTOKE CASTLE.

The church, which stands prominently on the top of the hill, and is a conspicuous object for many miles round, has a fine tower and spire, built about the reign of Edward III. The body of the church has undergone so many repairs, that it has lost all architectural interest; but the choir, added about the Tudor period, is very perfect, and offers a good example of the style. This combination, the body of the church in a more severe period, with the choir added in a later and more decorated style, has been adopted by some modern architects with happy effect; particularly by Forster of Liverpool, in his design for St. Matthew's.

Across the churchyard we commenced our stroll towards Maxstoke Castle, announced by the railway guide-book to be still perfect, and still occupied by a lineal descendant of the founder. This, with the account of a machicolated gateway, formed a tempting bill of fare; and we proceeded across the fields at a brisk pace, in anticipation of a rich antiquarian treat. After making our way over the preparatory excavation for the Derby branch railway, we entered the park; and, starting a fine herd of deer from their morning browse, who galloped away at full speed, with antlers couched along their backs, on suddenly turning the corner of a belt of plantation, obtained a view of the building. There it stood, rising from the ancient moat, still filled with water as of old; the towers and embattled walls of that peculiar grey that centuries alone can dye, and which, strongly lighted by the morning sun, showed not a single modern stone to profane the venerable tinges of old Time. Here, in 1838, was a real feudal residence still complete; the park, the style of the country, with a Sherwood Forest look about it, the herd of deer, and the moated fortalice, realised together a picture that carried one back at once to the age of castles and outlaws, and armour and crossbows, and hawking, and a host of other images, which the name of such a period hurries over the region of imagination. I was actually some-

* Coleshill is about eight miles south-east of Birmingham.

what astonished, on recovering from my reverie, to find myself clothed in coat and trowsers of modern Bond Street fabric. On reaching the front of the building, however, the reality fell somewhat short of expectation; and, worst of all, the machicolated gateway was not there. Nevertheless, there was a gateway, and a very fine one, flanked by octagonal towers, with the original shield sculptured at the building of the castle, and still showing its chiseled blazonry as sharply as on the day it was finished, above the pointed arch of the entrance; on the ceiling of which is some fine groining. But here all the original building ended. Crossing the bridge over the moat, we passed beneath the pointed arch, and found, on entering the enclosed court, that nothing remained but the shell; that is to say, the protecting outer wall, with its corner towers and its entrance gateway. The interior, however, of this wall or rampart presented some points of interest; for the ridge or platform beneath the loopholes, where stood the bowmen, is perfect; as well as another less prominent one above, which enabled a few good marksmen to stand and take aim between the battlements. The irregular heap of buildings constituting the residence is comparatively modern, and possesses no interest in the eye of the antiquary. . . .

RAILWAY ENCROACHMENTS.

. . . . Here* is a point at which we are tempted to exclaim against the innovations of railways. Aston Hall, one of the finest Elizabethan seats in the kingdom, is situated on the left, with its noble avenue of elms stretching far away, through the midst of which passes the insolent railway, upon the stilts of its mushroom embankments. Obstructing the view from the Hall, ruthlessly destroying the ancient avenue, and spiriting its steam and smoke, and sputtering its sparks into the very windows of the venerable old house. However, if satisfactory compensation has been made to the proprietor, in the tangible form of the circulating medium, others have but little right to complain; for a great public work is surely not to be interrupted by any overstrained respect to the dignity of an ancient manor-house: yet, we cannot but sympathise, for a passing moment, in the desecration of an object that time and association had long rendered locally venerable. In keeping with the invasion of the railway, is the invasion of the present proprietor, lifted by the powers of steam into the seat of aristocratic pride, the pomp and circumstance of which is now by the same steam destroyed. I need scarcely add, that the proprietor bears the great name of Watt. . . .

* Aston two miles north-west of Birmingham, where the Grand Junction Railway passes through Aston Park.

MANLY HALL* AND DRAYTON MANOR.

. . . The first object which attracted my particular attention, and tempted me from my direct path, was a building in a style intended, I presume, to be Tudor Gothic. Taken as a whole, it has a rather good effect from a distance; for the highly decorated tower, and other parts of the building, are, from this point, well backed by dark foliage, against which the white stone of which it is built comes out in strong and striking contrast: but, on a nearer approach, it proves to be full of architectural absurdities, particularly those of combination. It is evidently cotted together from books of Gothic ornaments, with which it is overladen; and, though the details are well executed, the general workmanship good, and ample credit due to the mason, yet the architect, the presiding genius, has been sadly at fault. Like a bad general with good troops, he has not known how to combine his forces, so as to produce a simultaneous and general effect; and victory has consequently been denied to him. The result, in this attempt, is, that the whole fabric comes under the head of structures in “fancy Gothic,” which are aptly enough denominated gingerbread.

About five miles farther brought me in view of the picturesque tower of Tamworth, at some distance on the left; and near this point is the entrance to Drayton Manor, the seat of Sir Robert Peel. I was anxious to see the style of residence that a man of Sir Robert Peel’s acknowledged taste would create for himself, with the command of unlimited means. A good estimate of a man’s character may, I think, be made by a study of his house. Some pretend to judge the disposition of an individual by his associates; some by handwriting; but I would rather say, show me his house. So much of the tone of feeling, of the style and extent of acquirement, may be estimated by the examination of a residence; ostentation or modesty, a love of literature or the fine arts, or the neglect or total absence of all or any of these characteristics, may be traced in the construction and arrangement of a dwelling. However, no such inquisitorial project is mine; and I look upon this building merely as a piece of architecture, and judge of it only as it affects my critical feelings in its relation to the progress of art. I was not disappointed with the effect of the mass, to which (although the first glance was perhaps below my expectation) a closer examination obliged me to concede the possession of a noble simplicity of general conception, and allow that the general effect was decidedly good. It presents no marked peculiarity, either to strike with admiration at first sight, or to encourage criticism upon a closer exa-

* The seat of Mr. Manly, about five miles from Lichfield, and six from Tamworth.

mination ; and, if I sought a single term to express my opinion at once, I do not think I could more correctly express my feelings, than by calling it a “gentlemanly” residence. The style, if it can be said to belong to any acknowledged style, is Elizabethan, but pared down to a severity almost Grecian. All the “quips and quiddities,” as Falstaff would call them, of the Elizabethan are trimmed away, and an effect is thus produced of which I should find it difficult to cite an example. The Greek, or Roman, or Italian, never harmonises well with the peculiarly rural effect of our park scenery. They have either an exotic or townish air ; they seem like a portion of city transplanted into the country. They appear uneasy, like the silk hose and pumps of a courtier in a ploughed field ; out of place, like the “fool i’ the forest.” In short, they do not seem to harmonise with the scenery like the Elizabethan manor-house ; which, whether from associations or absolute fitness is difficult to decide, seems to amalgamate with, and form a component part of, the green slope and the tufted wood, and the herd of deer, and all the characteristics of an English park. But to make an accurate copy of an Elizabethan house appears to me a sort of affectation, beneath the genius and originality of the age. Besides which, its quaint carvings and grotesque devices are not in accordance with, or illustrative of, the taste or feeling of the present stage of civilisation ; and this fact seems to have been kept in view, either by the architect or his employer, in making the design for the residence of Sir Robert Peel. The main forms, which observation had taught were so well suited to the purpose, have been adopted ; whilst the unfit details, which alone have hitherto been the life and soul of most attempts in the Elizabethan style, have been pared away. This is the true method by which to originate a style ; take such features and principles of the works of our predecessors as are in accordance with our own wants, and no more. Let fitness govern the form of every great feature, and illustrative appropriateness every decorative detail ; and the consequence will be an original style, new in its combination, noble in its outline, and chaste in its decoration. A national style might, as I have often before declared, be formed upon this principle, as original, as pure, and as homogeneous in all its parts, as any style that has preceded it, from Egyptian to Palladian. Such a style, and the demand for originality which it would create, would speedily put an end to a system of paltry plagiarism and imitation ; and cause such men alone to become architects whom nature has endowed with capabilities for the exercise of the art ; innate feeling of abstract beauty, with genius to combine and adapt the forms prescribed by that feeling to architectural art. An end would then be put to the production of hosts of inanities, by a set of men who are apprenticed to

what ought to be a noble profession, as a mere trade ; and who learn to put together out of books certain parts and pieces, much as a child fits together the shapes of a Chinese puzzle.

The process adopted in designing this residence is a step towards the principle I am advocating, but doubtless without the same ultimate view ; and, consequently, it possesses some defects which I must point out. In the first place, the rich perforated gallery that crowns the greater part of the building is too rich to harmonise well with the other parts ; and it is also of a decidedly Gothic character, of a period anterior to the Elizabethan that forms the basis, as it were, of the composition, which is a still greater objection, involving, as it does, an anachronism very disagreeable to the architectural critic. For instance, suppose an architect designing a building professedly composed of an admixture of the Tudor and Elizabethan styles, it would be contrary to every principle of taste to make the *lower* portion of the edifice Elizabethan, and the *upper* part of the earlier Tudor. It is necessary in designing a building in any declared style or styles, that the chronology should be correct. In the case supposed, had the *lower* portion been of Tudor Gothic, and the *upper* part Elizabethan, no anachronism would annoy the critical eye, and it would present a combination that might actually have occurred, and be in accordance with the true principle of imitation in the fine arts. If, then, in designing in any acknowledged styles, it would be inconsistent to place the earlier above the later style, the same rule applies in the case of the enriched gallery or balustrade in question. The general feeling of the mass is based upon the principles of the Elizabethan style ; and, consequently, the placing of a surmounting ornament of a much earlier date than the style upon which the composition of the mass is founded, is a violation of that species of chronology ever to be carefully observed in the art. In another point of view, too, it is bad. Supposing this design to possess claims to nearly total originality of style, the architect may say that he is then absolved from all observation of rules that might apply to any former style, Elizabethan or Gothic, or both, for instance, and that he is at liberty to use what details he pleases : but, on the contrary, the novelty of his style no more entitles him to make it a stock upon which to engraft heterogeneous features, than if it were an acknowledged and settled style ; and the engrafting of a well known, perfect, and complete member of one style, upon another style utterly distinct (leaving chronology out of the question), must ever produce a discordant and disagreeable effect. And such, indeed, is the one produced by engrafting this feature of florid Gothic upon this severely simplified Elizabethan, or original modern English, whichever the architect likes best to call it.

The next fault I find is, that, in one division of the building, that which contains the entrance at the back, a solid parapet is substituted for the perforated gallery, and divided into oblong square compartments of a Roman character, quite as much at variance with the general feeling of the design as the Gothic gallery. But, to make it worse, this parapet is surmounted, at a point above the entrance porch, by a great knot of Elizabethan ornaments supporting the arms; and as such things have been so wisely cut down in other parts of the building, their introduction here is an eyesore. My objection is not to the arms or other heraldic emblems judiciously introduced; it is to the unmeaning Elizabethan flourishes by which they are supported. The last defect I shall allude to is the entrance porch, which is in a paltry sort of cockney Gothic, quite at variance with, and infinitely below, the general style of the building; whilst the same feeling in which that is conceived might have produced an entrance porch of very noble character. I need hardly say how much these inconsistencies detract from the homogeneousness of the general effect. The inferior attached offices, of considerable extent, display but little attempt to bring them into a perfect accordance with the main building. They are the usual Elizabethan, of the simplest character, with indented and round-topped gables, with the exception of the two square towers, which partake of the Italian castellated style; but the gallery and cupola of the smaller one are of a mixed sort of English Gothic sufficiently bad. The square towers, however, are more in harmony with the house than other attached buildings; and, seen from a distance above the principal front, have a picturesque effect, particularly if the spectator is at a sufficient distance not to be annoyed by the details.

A considerable space of turf, divided by a few gravelled paths at right angles, is enclosed round the front and sides of the building by a balustrade, surmounted at intervals by marble vases, in a totally distinct style of art from anything connected with the building, and which balustrade is in good taste. The vases do not form a component part of the building; they are perfectly detached works, and acquire a new interest from their distinctive character. They appear as they should do; detached works of art collected in foreign travel, and made to contribute to the embellishment of the family seat, in the most appropriate place that could be found for them. This circumstance may have been the effect of accident rather than calculation; but, if it is accident, it is a lucky one, which, like a fortunate though chance touch of the pencil, often produces the happy effect on a picture which labour and calculation have attempted in vain. They remind me of the apricot tree, which the great artist, Beckford, carefully trained against the side of the principal entrance of Fonthill Abbey, as though some pilgrim monk had brought it home on his return

from Palestine*, and planted it, as a rarity, in the most conspicuous situation. . . .

STATUES IN LICHFIELD.

The good people are busying themselves about the setting up of a statue in the marketplace to their fellow-citizen, Dr. Samuel Johnson, a man, it seems to me, much overrated; for what were the labours of his famous dictionary, upon which his fame principally rests, compared to those of the great Italian who compiled the first Greek Lexicon? and yet his name is unknown, except to the bookworn student. But, I believe, the manes of Johnson might have called in vain upon his fellow-citizens, had not a Mr. Law, chancellor of the diocese, liberally proposed to put up the statue at his own expense. The intentions of Mr. Law were doubtless good and liberal, but his judgment rather questionable, or he would have employed a more efficient sculptor; for it is said that 500*l.* were expended, a sum which might have commanded a much better work. Even a good model cast in iron, and bronzed, would have been preferable to the lump of tortured stone that has been set up. Such a position! such a head! such hands! and, above all, such drapery!—such folds were never seen; the author was evidently quite above consulting nature in the business, and probably exclaimed, with Fuseli, “Damn Nature, she puts me out!” The pedestal is well enough conceived, representing on the four sides four interesting events in the doctor’s early life, in basso-relievo, but it is equally bad in execution. A better sculptor than the one employed, however, might have found some difficulty in imparting anything like dignity to the slouched and shapeless body of the subject; and it occurs to me, that the custom of the Greeks might have been advantageously followed in this instance. They only permitted a “portrait statue” under very extraordinary circumstances; whilst those generally decreed to eminent citizens were formed upon the principles of abstract beauty, and merely identified with the individual by some accessory, or by an attitude representing, like an actor, some leading action of the honoured citizen’s life. By this means, a memorial was conferred upon a citizen, at the same time that a beautiful piece of sculpture was made to decorate the city. But to return to the statue of Johnson; with all its faults, it will do good; it will lead to discussion; and it will teach the citizens to think on form and effect; a slight knowledge of which will lead to a love of art, and, gradually, to that appreciation of the beautiful which is the grand test of refinement of mind. They talk of a statue to their fellow-citizen, Garrick, also. I only trust it may not be by the same hand. . . .

NEW CHURCH AT STAFFORD.

A church is in progress at the end of the town, in the Lom-

* The apricot is a native of Syria.

bardic, or what is usually called the Saxon, style. The semi-circular arch introduced in this feeling has a good effect in church architecture, and very fine things might be produced by a careful study of the style. I would recommend a young architect intending to pursue it, to see the great original types of the style in the north of Italy, particularly the cathedral of Trent, the interior of which equals the finest cathedrals in the pointed style, in that peculiar religious repose which is their great advantage over temples of almost every other style of architecture; and surpasses them in a noble majesty of effect, of which the pointed style is not capable. . . .

STATUE TO THE LATE DUKE OF SUTHERLAND.

Upon a high and commanding point of moorland, which is a conspicuous object from the windows of Trentham Hall, I had long perceived an object which appeared like a monument, and which, on a nearer approach, I found to be the statue of the late Duke of Sutherland, which (as a countryman declared to me, as I climbed my way up,) people came *thousands* of miles to see. Here is a very different work from the Lichfield statue; it is impressive even when approached from behind, and in front the effect is really grand. It is of noble dimensions, and stately and well poised in attitude; the drapery well disposed, and executed in a simple, but bold, manner, though it does not possess the highest character of which drapery is capable. Chantrey has studied the drapery of Albert Durer, and it is a noble school. The head is very fine, and it is an excellent likeness; such a head was a worthy model for the sculptor; and in this instance a "Portrait statue" excusable. The pedestal is simple, and yet imposing; and is well calculated, by the absence of sharp angles, long to defy the ravages of time. . . .

TRENTHAM HALL.

In the great additions and alterations making under the direction of Mr. Barry to this princely residence, the Italian villa style of the period of Borromino has been adopted; and I could almost have fancied myself standing at an entrance of some portion of the Villa d'Este on the hills of Tivoli, or some of the vast fabrics called villas at Frascati, the Borghesi or Cesarini, or, nearer Rome, the splendid Villa Panfilì; though none of these present anything precisely similar, but the general character is closely imitated. This close imitation of a style seems rather retrograding from the high ground I had assigned to the architect of Sir Robert Peel's residence; for the Italian architecture of the period in question might have furnished some general principles well fitted for the formation of a nobler style. However, we must allow the merit due to copying a style *well*, for here it is done well; and to do it well is no easy matter, as may be readily

proved by the mongrel absurdities that we behold every day dignified with the name of Gothic, or Italian, or Grecian. The rich details, in these additions to Trentham, are much better executed than such things in their Italian models, particularly the arms and supporters which are repeated on three sides of the pavilion which forms the new entrance porch, and which is a rich and beautiful design. Indeed it would be far too rich for the rest of the building, if not supported by the rival richness of the great tower, which is rapidly rising at a point that will make it a central object on the approach to this entrance. I have said that I do not think the Italian style at all suited to our park scenery; and certainly, when rising, as it were, from out the green turf, with nothing to modulate the transition but a carriage drive, or at most a single terrace, as is the case with most country seats of importance, the effect would be much as I have described, I think: but this objection is obviated in the present instance, by an appropriate framework, similar to that which surrounds the Italian villas which furnish the style, and forms the greatest feature of their magnificence. A vast esplanade is formed here, decorated by superb fountains, and terminating in a balustraded terrace above the lake, enriched at intervals with marble pavilions; and this arrangement will soften this too city-like architecture into the landscape by degrees; and so counteract the harsh effect otherwise inevitable. . . .

NEW CATHOLIC CHAPEL AT NEWCASTLE UNDER LYME.

In the erection of this chapel, the priest has been his own architect, with the laudable ambition, I suppose, of becoming a modern William de Wykeham. He has, however, committed a few architectural blunders; and I was informed that part of the building had to be taken down more than once. A brick-maker being one of the congregation, and a near neighbour of the priest, recommended bricks as the best material for the building, though the design for the elevation, à la Wykeham, was the florid Gothic. A good deal of contrivance was required to make the bricks answer this end; but by a few moulds for giving one side of a brick the impression of a rosette, a trefoil, or an ogee moulding, with a few other devices according to the forms required, the difficulty was overcome; and more variety has been produced than might at first be thought possible; quite enough to prove that many pleasing effects might be obtained in brickwork, without resorting to composition mouldings and cornices. In this instance, however, the effect is not very happy; for the bricks are burnt black, or partially vitrified, which gives a dark and disagreeable character to the building. In addition to this disadvantage, I should not think Gothic the best style to show varied brickwork to advantage; at all events, such Gothic

as this, which is of that London Guildhall species so distasteful to an amateur. . . .

SINGULARLY DEPRAVED TASTE.

On leaving Newcastle, by the Congleton road, I met with an egregious example of bad taste, exhibited in a pair of expensive entrance gates to a villa. They were carved in imitation of rusticated stonework to *match* the wall. Had it been the intention of the designer to conceal the gates, and make them appear as part of the wall, the device might appear excusable; but to proclaim them gates beyond all doubt, and not part of the wall, a huge set of hinges were so ostentatiously displayed, as to render it evident that he had no end in view beyond producing what I have no doubt he considers a pleasing novelty. . . .

STOCKPORT PUBLIC CEMETERY.

At the entrance to the cemetery is a large board with a list of the various expenses of interment, which, together with the other liberal announcements it contains, must tend greatly to remove the prejudice against cemeteries prevalent among the lower orders, and tend to remove their predilection in favour of the crowded town churchyards. I give the contents of the board, and recommend the adoption of a similar announcement and terms in cemeteries near the metropolis.

“ *Public Graves.*

							<i>L.</i>	<i>s.</i>	<i>d.</i>
“ Single interment,	-	-	-	-	-	-	0	8	0
Children, when a bier is not required				-		-	0	6	6
Still-born children	-	-	-	-	-	-	0	1	0
Single interment, with name, age, and time of decease engraved on stone	-	-	-	-	-	-	1	0	0

“ *Private Graves.*

“ Land for a grave	-	-	-	-	-	-	1	10	0
Sinking a grave 9 feet, and fee of interment				-		-	0	10	0
Stone for grave, squared and bordered	-	-	-	-	-	-	1	15	6

“ Hours of internment: from Nov. 1. to Feb. 28., 3 o’clock in the afternoon; from March 1. to October 31., 4 o’clock in the afternoon.

“ Persons interring are at liberty to bring their own minister, and to use their own form of service, or to avail themselves of the services of the chaplain of the cemetery.”

STOCKPORT NEW CHURCH AND ARCHITECTURAL FAME.

. . . A steep narrow street, called the Rostron Brow, brought me upon the elevated marketplace, where I was much struck by a particularly fine modern Gothic church, in which part of its predecessor has been preserved. A woman was engaged in cleaning the steps; and, the door being open, I walked in, and was so much pleased with the whole management of the design,

particularly the groined roof, that I was most anxious to ascertain the name of the architect. But this I found not so easy a matter. I asked the question of at least twenty respectable tradesmen in the neighbourhood, but without gaining the information I desired. At length, with better hopes of success from his learning, I addressed myself to the surgeon-apothecary, whose goodnatured face I had descried between the blue bottles in his window. He hurried forward with a medicinal smile, which however vanished when I popped my unexpected question; and he dropped the finger and thumb which had been outstretched to tickle my pulse. He could only inform me that the rebuilding took place about twenty years ago, and that it was unlike the old church. I had imagined it a restoration. Recollecting himself, he produced from a drawer filled with old papers a medal struck upon the occasion of the consecration; but this was but another failure. Here were the names of the dean who read prayers, of the bishop who preached the sermon, and of the churchwardens who, in their best suits, stood with silver-tipped black wands at the front door; but not one word of the architect. Here is consolation for the aspiring student! . . .

THE ARCHITECTURE OF MANCHESTER.

On entering Manchester by the suburb called the London road, it becomes at once evident that you are approaching a manufacturing town of the first rank. It is at a glance observable that it infinitely surpasses Birmingham in the general style and more lofty proportion of the houses, and in its noble ranges of warehouses, which are much more imposing from the superior height, than any buildings of the same description in Birmingham. On entering Market Street, this impression of superiority in the general style of building is strengthened; many houses being five or six stories high, and in some instances a whole range is made to form one architectural design, after the manner of Regent Street, or Regent's Park. It must be confessed, however, that these designs are in few instances very good, though from their loftiness they produced a good general effect; but, if their line were continuous, they would form a street surpassing Regent Street, by the great advantage in importance and effect acquired by their height. The first great public building met with is the Infirmary, on the left as you enter Market Street; which, being of the Ionic order, and displaying some similarity of general plan, may be well pictured to the imagination by the Post Office in St. Martin's le Grand, reduced a little in scale. Only the centre and one wing, however, are at present complete, and the addition of the other does not appear to be contemplated at present, if one may judge from a display of windows on the side of the building it should join. Continuing this line of street, I found a

succession of handsome shops, busy coach offices, and good inns, amongst the best of which seemed the Royal Hotel. Observing a street called the Dean's Gate, I was struck with the name and turned down it, but it was not what I anticipated; I had expected a few antiquities, but discovered nothing except that the houses were much better than the houses of second or third-rate streets of other manufacturing towns. I eventually, however, arrived at a market, a covered market, and one evidently established many years; the butchery, or shamble department, appeared to have been long standing: and so Manchester, it would seem, in the matter of covered markets, which is a mark of advance in a town, preceded most other towns in England. There are several other covered markets here, but none equal to the one at Birmingham. Returning again up Dean's Gate, I found out the Exchange and Post Office, the latter having no pretension to architectural character, and the former presenting nothing to remark upon, although forming a good object enough. Crossing this part of Market Street, I found my way to the old collegiate church, a fine Gothic structure of a fine period. The carving and screenwork in the chancel are wonderfully fine, and so is the ceiling: quite a study. With such a school of art as this, the Gothic architects of Manchester ought to become finished masters of their art, and imbued with its true spirit and feeling, without which, modern attempts at that style are barren and unmeaning. What a fine spirit of art it was that inspired the great carvers of the middle ages; what sharpness of cut, what expression, what finish! And it is easy to see that it is an excellence not merely mechanical; for, on examining a carved border, it will be found that the touch continually varies in the repetition of the same objects, yet not enough to disturb the symmetry, while sufficiently to give individuality to each part; a superiority that the work of the hand, when guided by taste and feeling, must ever possess over casting and moulding: and here the old Gothic architects are invincible; for, even if we could create a school of carvers, the public and the church are both now too poor to pay for their services; at all events, upon such a scale as a William of Wykeham employed them. Beyond the church I found the old college, an interesting building, un-restored and unadulterated by modernisation of any sort. It was founded by one Cheatam, a high-minded merchant like Gresham, who has thus conferred a lasting benefit upon his native town. It contains a good library, which is public in the true sense of the word; that is, any person may go in at any time, and call for any book he requires, unannoyed by any irksome restriction whatever. The principal reading-room is a good spacious old apartment, containing some curious pieces of carved oak furniture of an earlier period than is usually found;

that of the fine screen-carving and tabernacle-work. I could enjoy a few weeks of old-book-poring in this old room amazingly, particularly in the little pavilion, which is a small square apartment out of the main room, over the entrance porch. Here, where the soft light streams in through the stained glass of the traceried windows upon the carving of the table, I could unclasp some antique volume, and pore over the quaint sayings and hoarded wisdom of a former age, for many a day untired. What a retreat is this from the busy turmoil of the cotton metropolis, and yet but few seem to take advantage of it. I must surely come and read here for a month or two some summer, for I am told they have some books which are unique, and many others so scarce as not to be found in any other public library.

Of its modern public buildings, Manchester has much cause to be proud, for they are numerous, and bespeak a lavish munificence highly creditable to the place. In Mosely Street (a short time since the principal street for private residences, which are now transferred to the suburbs,) is a building called the Portico, a literary institution founded some twenty years ago. The entrance is, in fact, a portico of the Ionic order, with plain columns. It was the first architectural effort of the Manchesterians; and, though possessing more than all the poverty of style which distinguishes many of the attempts by inferior architects at that period, was, nevertheless, a great step above the dingy brick and mortar of the surrounding buildings, and soon led to other and better things; and so far possesses an interest, for it marks a period in the advance of civilisation. A little below it is the Institution, a building erected by Mr. Barry, about 10 years since, I believe. I was not pleased with the exterior; the Ionic portico is heavy, and the volutes appear over-large and gouty for want of the fluting in the columns, which the Greek Ionic absolutely requires. However that may be, it is a handsome building of considerable size, and marks an immense step in the advance of the art beyond the stage of its neighbour and predecessor. It contains reading-rooms, a library, a recently established school of design, and a room for the annual exhibition, now open, which I must see at once, for I can never resist an exhibition of pictures. After being somewhat dissatisfied with the exterior, I was most agreeably surprised when I found myself in the great entrance hall. It is magnificent. It is just that happy union of sculpture and architecture where the beauties of both are so mutually assisted and brought out; just that union which I have seen attempted on paper, but never before transferred to stone. It is a picture realised. It is most beautiful. On the pedestals at the top of the wide staircase are the beautiful groups, the Graces of Canova, and the Psyche and Zephyrs of Baily; below, the Gladiators of Canova; and, round the gallery, his Mars and Venus, his Paris,

the Apollo Belvidere, &c. ; the whole lighted by small windows near the top, which admit sufficient light to form a beautiful chiaroscuro, but not to vulgarise by glare. In the morning, when the light streams in, and the rays fall brightly on a few of the principal groups, leaving the rest in a beautiful half tint, with the lateral entrances (artistically managed to obtain depth of effect) in dark shade, the effect is enchanting; it is decidedly the most beautiful work I have seen of Mr. Barry's, but it is not half appreciated by the inhabitants. Some hurry up the steps, never looking round; they are come to see the exhibition, not the entrance hall: others, who, if unprejudiced, might stay to admire, hurry past the statuary, the nudities of which they consider shocking; what feeling sensitiveness is this! Some few admire the general effect, but utter indifference is the feeling of the great majority, and by few, indeed, is felt the exceeding beauty of a composition never surpassed in any modern building which I have seen. The exhibition is poor, Etty's well-known picture of the Syrens being the greatest work, which is, at best, a disagreeable specimen of the master. Had I been Ulysses, I feel confident that I could have sailed past without the slightest wish to say *Bon jour*; unless, indeed, their voices had possessed more captivating charms than their persons. But Etty is a great master; no painter of any modern school has represented flesh like him, particularly in female subjects; there is a fine solid firmness of surface, and yet an indescribable transparency, which shows you that blood is circulating beneath. A beautiful blue tint, the shadow of the meandering veins, seems breathing through, yet never appears upon the surface to chill the warmth of the colour. No painter has ever produced that effect of fair female skin so happily. But I would select some of his smaller pictures, and avoid those with his too wild and luxuriant Bacchantes. Some ten or twelve I could mention, which, in classic purity of conception, as well as magic colouring, are perfect gems. Antique gems breathed into living pictures, like

——— “Pygmalion's statue waking,
The mortal and the marble still at strife,
And timidly expanding into life.”

But I must dismiss the exhibition, and continue my search for the public buildings. On the opposite side of the street is the front of the Manchester and Salford Bank, a bold design in the Corinthian order, for which, however, the space was too restricted; and, moreover, the features about the basement are too poor for the columns and pediment above. It is the design of Mr. Tattersal, I believe.

In a street near King Street, I think, is situated the Town Hall, a good composition by Goodwin, of the Ionic order; and here the columns are fluted; the increased beauty, in consequence,

is at once perceived. There are, however, singularities in the design of some ornaments a little in the Percier and Fontaine school, which I scarcely know whether to like or not. The entrance is very good; but the staircase appears to have been narrow and defective, and has been altered and much improved by Mr. Lane, who stands, perhaps, at the head of the profession in Manchester; though his works, particularly in Gothic, have many little disagreeable negligences of style which want correction. The great room above is the original design of Goodwin, and displays much invention and taste; it is a grand apartment, and relieved from much of the ordinary insipidity of public halls by the introduction of painting. The union of painting with architecture is capable of producing as much beauty as sculpture; and beauty of a more appropriate character in this situation. Groups of sculpture are more in their place on the staircase, and in the galleries of approach, whilst the warmth of effect, and the finish obtained by painting, are of the highest advantage in the embellishment of great public apartments. I cannot much admire the execution of the paintings themselves, which, I believe, are by Aglio; but the polychromic effect produced is good, and may serve as a hint for other similar buildings. It cannot be denied that the general effect of the room is very grand, and does great credit to the architect; who, in carrying out his idea, with the experience of the present happy effect, and with a more efficient coadjutor, might have done much to infuse a taste for fresco painting in the interior of public buildings; but I am sorry to hear that he is lost to the profession and the art by a premature death.

To return upon our steps; behind the Institution is the Athenæum*, now building and nearly complete. The competition which took place for this building is a sad *exposé* of the unfair system upon which pretended open competitions are carried on. The committee had previously decided among themselves who should have "the job," but were placed in an unexpected difficulty, by the striking superiority of a design sent in by Mr. Atkinson, which two or three of the committee had the honesty to admit at once. This created a schism, to put an end to which, a compromise was agreed to, by which *all* the designs were rejected. Soon after this event, Mr. Barry was in the town, to look over some works which he has in progress there. He sketched out roughly, during a conversation on the subject, an outline of his own idea of such a building; and this sketch was immediately seized and carried to the committee. They were in a difficulty, and, to extricate themselves, adopted it at once. No blame whatever can attach to Mr. Barry for the unfairness of the committee; and, for once, unfairness has produced a happy

* An open literary club.

result ; for I believe it is generally acknowledged, that the present building is superior to any of the former designs. It is just one of the Pall Mall club-houses transplanted to Manchester, and the fine square general mass will tend to improve and simplify provincial taste ; but, in detail, it is not the most happy of Mr. Barry's works in what may be called that Greco-Italian style which is, I think, his fort. The cornice is overdone, whilst the principal entrance is too poor ; the three-quarter attached columns have a mean effect in juxtaposition with such strong projections, as other parts of the building, particularly the cornice, display ; the great space, too, above the windows, necessary, I believe, for rooms above (a theatre, or something of the sort), is not happily managed. There is a smaller side entrance, very superior to the front one. In churches, nothing but Gothic seems to be doing. The finest, taking it altogether, is one by Goodwin, built nine or ten years ago, the effect of which is, however, much injured by irregular colour of the stone. One by Barry, completed about the same period, I believe, is very inferior, with the exception of the elegant steeple. The body of the building, and the tower up to the commencement of the steeple, are quite deficient in the true feeling of the style, and full of inadmissible adaptations. He has made much progress in the Gothic, since this period. A new chapel in the same style, which he has now in progress, promises better, but it has many faults ; the base and surbase mouldings are much exaggerated, and, in consequence, appear quite a caricature of Gothic mouldings, which are so chaste and beautiful. The simple alternation of buttresses and small windows all along the side displays great poverty of design ; and the front, though pretty, contains also some inadmissible details. Mr. Atkinson has far surpassed it in the church he is building at Cheatam Hill, which is conceived in the true Gothic spirit, and full of careful study in the detail. He is one of the most finished Gothic architects of the day. But none have mastered the true spirit of that intricate and beautiful architecture, which produced our wonderful cathedrals, so completely as Welby Pugin ; and yet we do not see him engaged in any public work. Perhaps his strong Catholic feeling causes a prejudice against him ; if so, the Catholics themselves ought stand by him, and it seems that in Manchester, where they form a strong and numerous body, they are determined to do so. They talk of building a cathedral, and leaving it to Pugin to make as splendid a work as he chooses, regardless of expense. It is said, they even go so far as to call it a dispensation of Providence in their favour, that such an architect has sprung up among them, capable of creating for them fanes as splendid and impressive as those which they raised in their palmy days, but which the reformation wrested from them for ever. I hope, at all events, that the pro-

ject of a Catholic cathedral at Manchester may be carried into effect, for I do not think that the finest architectural combination in the world will make any more Protestant apostates than would fall off in the usual course of events; and I feel, at the same time, sure that such a building would be produced as would give a new direction to the studies of architects practising the Gothic style.

The next architectural feature that interested me was, the suburban villas of the merchants and manufacturers; and of them, I was told, I should find the best specimens along the Oxford road. Here, however, I was somewhat disappointed, for none of them equallèd the neatness and finish of those of the Birmingham traders at Edgbaston; and very few indeed put forth any claim to architectural character of any sort. There were a few exceptions, however. One, in the simplest Greco-Italian, was very graceful and simple.

The next thing that struck me was the Victoria Park, entered between two Grecian Doric lodges of poor design. This is a tract of land, purchased by a company for the purpose of building a number of villas, all so arranged as to minister to the general beauty of the park. The design of each individual villa will be left to the choice of the person taking the land, only binding him to a certain rank of house to face in a certain direction. This will, no doubt, eventually form a very beautiful spot. The villa which struck me most (there are yet but few complete) was that of Mr. Lane, the architect, which possesses many beauties. The raised terrace, the graceful carving of the barge-board, and the lightness of the attached conservatory, are all pretty objects; but to the eye of one a little versed in the Gothic, it is spoiled by inaccuracies of detail. The window-sills are square, instead of being splayed, and supported by square blocks underneath, of a Roman character. This jumble of styles is very disagreeable; and then there is a poverty, too, in the design of the windows, which require stone jambs, but which are left with only finniken wooden framework. However, the general effect of the design is exceedingly pretty; and to a lady's eye, not over-practised in architecture, must appear one of the most charming little cottagèornées possible to conceive. Farther along the road, I met with a pair of lodges, the entrance to another park upon the plan of the Victoria; the entrance to which is very pretty, with willows, and water, and swans, and all that sort of thing. However, the company, it appears, did not think the speculation a good one, and sold it; so that it is now in the possession of a private individual. The entrance lodges are extremely pretty, in the Italian style, the design of Mr. Atkinson, whom I before mentioned. Some little distance farther, is a villa in the Old English style, also by this architect. It is of brick, with stone porch and

window facings, and is a very simple and bold design. The chimneys particularly pleased me : they are entirely of brick, but rendered ornamental and characteristic by the style of the work, which admits of great variety of form. They are, however, not overdone in this respect, and are quite reviving after the over-ornamented compost things one is in the habit of seeing introduced in this style, overpowering, by their heavy cumbrous ornament, every other decorative feature of the building.

Finding myself now three miles from Manchester, I returned upon my steps, reflecting upon the industry and wealth that had produced this three miles of building, principally dedicated to the habitations of wealthy individuals.

This, however, is only one suburb ; and, though, perhaps, the principal one for superior residences, there is also the London Road, and Cheatam, and others, which must be taken into account in considering the resources of Manchester ; and also those residences upon a more extensive scale, which are at a greater distance, and take the lead in the developement of the principles of refinement and high civilisation. Such are the seats of Mr. Clowes at Broughton Hall, Mr. Bow at Broughton, and Mr. Travers at Travers Park. Here all is in the highest style of keeping ; the gardens present the newest and most recently introduced flowers, cultivated in the highest perfection ; fruit too is grown in the greatest perfection by every assistance art can afford ; and conservatories and hot-houses enclose the most beautiful foliage of temperate and tropical regions, flourishing in all their native luxuriance ; and collections of orchidaceous plants, now so interesting to the botanist, are also making at many of these residences, under the direction of experienced gardeners. With such examples of refinement, the progress of general civilisation must become rapid and more rapid.

My next point was the Botanic Gardens, to which a stranger can only be introduced by one of the hereditary members, and the public of Manchester generally are also excluded ; none but subscribers being admitted. This exclusive system must be injurious to establishments of this nature, and is not in accordance with the spirit of the times. The gardens, however, thrive ; and though some improvements have been abandoned for want of sufficient capital, yet funds for general purposes are not wanting. The conservatories, &c., are nearly 300 ft. in length, and there are 300 or 400 feet of glass in other parts of the gardens ; peach-houses, graperies, pine-houses, &c. The entrance is a bold architectural composition in the Ionic order ; which, however, though handsome from its scale and pretension, possesses no peculiar excellence of invention or design. On entering the garden, the foreground displays itself well in lawn and shrubbery ; which, considering that it has only been planted 8 years, shows a hand-

some growth, and in the height of summer must already be very beautiful. In the lower part of the garden is a piece of water, with some fancy bridges, a prettily laid out flower-garden, and, above all, a rocky walk, the best-managed thing of the sort I have seen. The stones were brought from a distance of forty miles, and are so well disposed, that, with the assistance of the ivy and other creeping plants which have partially covered them, they form a romantic rocky valley, very like wild nature itself. Here is also a stream, managed on one side, but they have not been able to get slope enough to give the current sufficient activity to make it attractive. Attached to the establishment is a large walled kitchen-garden, which contains also the pineries, graperies, peach-house, &c., of which I have spoken, from which vegetables and fruits of the finest quality are furnished to the members and shareholders. Leaving the garden, I passed the Asylum for the Deaf and Dumb, with the attached chapel, a handsome range of Gothic building by Mr. Lane, though possessing the usual defects of his designs. . . .

London, Dec. 5. 1838.

ART. X. *Report as to the Safety and Efficiency of Joyce's Patent Heating Apparatus.* By J. T. COOPER, Esq., Consulting Chemist to the Polytechnic Institution, Lecturer on Chemistry and Medical Jurisprudence, &c.; and WILLIAM THOMAS BRANDE, Esq., F.R.S., Professor of Chemistry in the Royal Institution. In a Letter to Mr. Harper, the Proprietor of the Patent.

IN compliance with your letter addressed to me on the 10th March last, I have undertaken an investigation of Joyce's Heating Apparatus, in relation to its heating powers, the quantity of fuel consumed in a given time to produce in an appropriate room a certain increase of heat, also the amount of contamination the air of the room sustains in a certain time, as likewise the deterioration of the air by the combustion of oil, tallow, spermaceti, stearine, and gas, with the view of estimating the comparative injurious effects of Joyce's stoves, and of other methods, by which heat as well as light are produced, and also of the amount of contamination the air undergoes, in places where a number of individuals are congregated, and in which no injurious effects are found to occur.

In the outset, I may state that the room in which the experiments have been conducted is nearly 14 ft. long, 13 ft. wide, and 12 ft. high, and consequently contains about 2000 cubic feet. It has a chimney, and a peculiarly accurately fitted and well constructed register stove, which, when shut, effectually closes its lower aperture. Whenever a particular trial was to be made, bags of sand were placed on the junctions of the window sashes, and also at the bottom of the doors, and every precaution taken to make it as air-tight as could be.

I find that one of Joyce's stoves, the internal cylinder of which is 6 in. in diameter and 15 in. high, with an inverted cone, having twelve holes, each a quarter of an inch in diameter, burns three ounces of the prepared fuel per hour, when the regulating apertures at the top are quite open; in one instance, with a particular kind of fuel (such as is not commonly sold), it burnt three ounces and four tenths; but, taking the average of a great number of trials

carried on for days, its rate of burning is a fraction less than three ounces per hour; but in all cases the combustion proceeds without producing any of the unpleasant odour that occurs when charcoal of the ordinary kind is burnt in a similar manner.

In one instance, the stove was kindled, and at eleven o'clock in the evening was placed in the above-named room, the temperature of which was 62° Fahr.; the room was then closed, and not entered till ten o'clock the following morning. I then remained in the room about an hour, the doors and windows being kept closed, and found that exactly thirty-six ounces avoirdupois of the fuel had been consumed; and on testing the air taken from the upper, lower, and middle parts of the room, the greatest quantity of carbonic acid contained was three quarters per cent. The temperature had increased to $72\frac{1}{2}^{\circ}$ Fahr.

In another experiment, the stove was allowed to burn fifteen hours in the closed apartment, and at the end of that time it had consumed forty-four ounces and a half of fuel; and the air of the room, on being tested for carbonic acid, as before, was found to contain less than one per cent, and the temperature had increased thirteen degrees.

These experiments have been made repeatedly, and always with the same results, excepting some slight differences in the increase of heat.

It can be demonstrated as follows, that each ounce of pure charcoal, when burnt, will produce little less than two cubic feet of carbonic acid: for, 100 cubical inches of carbonic acid is estimated to weigh 47 grains, and every 22 grains of carbonic acid is known to contain 6 grains of carbon; then as 22 is to 6, so is 47 to 12.82, which is the weight of the carbon contained in 100 cubical inches of carbonic acid; then if 100 cubical inches of carbonic acid contain 12.82 of carbon, 1728 cubical inches, or 1 cubic foot, will contain 221.53 grains of carbon: again, if 221.53 grains of carbon be contained in 1 cubic foot of carbonic acid, 1 ounce avoirdupois, or 437.5 grains, will be contained in 1.97 cubic feet, which is so nearly 2 cubic feet, that, for my present purpose, it may be said that 1 ounce of pure charcoal will produce 2 cubic feet of carbonic acid.

If no change in the air of the apartment had occurred in the two cases before related, there should have been present in the first instance 72, and in the latter 89, cubic feet of carbonic acid, which would have made the percentage 3.6, and 4.45; whereas, in both cases, it was less than one per cent, thereby showing, that whatever care may be bestowed to render a room airtight, it is not possible to accomplish it so completely as to prevent the escape of the warm air, through minute pores and crevices from the upper parts of the room, and the entrance of the cooler air at the bottom; for in no other way am I able to account for the difference observed in the quantity of carbonic acid produced, and that detected in the air of the room.

An imperial pint of good sperm oil will burn, in a well trimmed Argand's lamp of the ordinary size, about twelve hours; but I find by my analysis, that a pint of such oil contains 6333 grains of carbon, or nearly 14.5 ounces avoirdupois, making the quantity of carbon consumed in one hour a trifle more than 1.2 ounces; which, as I have shown above, is equivalent to the production of 2.4 cubic feet of carbonic acid. It will follow from this, that two such table lamps, burning together, will produce nearly as much carbonic acid in the same time as one of Joyce's stoves, such as I have used in my experiments, and which I have before stated to be adapted for warming an apartment containing about 2000 cubic feet of air.

A moulded tallow candle (long four) burns, on the average of some hours, 122 grains of tallow per hour; but in 122 grains of tallow there are about 95 grains of carbon; consequently, about fourteen such candles, burning together, would produce as much carbonic acid in the same time as the Joyce's stove to which I have before alluded.

A spermaceti candle of the same size will burn in one hour 129 grains of spermaceti; but in 129 grains of spermaceti there are about 100 grains of car-

bon; consequently, about thirteen such candles, burning together, will produce in the same time as much carbonic acid as the Joyce's stove.

A stearine candle of the same size will burn in an hour 156 grains of that substance; but in 156 grains of stearine, there are about 121 grains of carbon; consequently, eleven of such candles, burning together, will produce as much carbonic acid in the same time as the Joyce's stove.

Another stearine candle from a different maker, with a larger wick but of the same weight (long four), will burn 175 grains in an hour; but in 175 grains of stearine there are about 136 grains of carbon; consequently, between nine and ten of such candles, burning together, will produce as much carbonic acid in the same time as the Joyce's stove.

Coal gas of average quality I have found to produce, by burning, 0.6 of its bulk of carbonic acid; an ordinary coal-gas burner on the Argand's principle, having fifteen holes, will consume 5 cubic feet of gas per hour; six tenths of five are three, therefore, 3 cubic feet of carbonic acid would result from one such light; consequently, two such gas lights, burning together, will produce exactly the same quantity of carbonic acid as the Joyce's stove.

But, independently of the formation of carbonic acid, all the common combustibles last named contain such excess of hydrogen as tends to the further deterioration of the air, by the abstraction of an additional portion of its oxygen, so as to leave an excess of residuary nitrogen, which, of itself, is nearly as deleterious as carbonic acid; the air, therefore, which issues from the glasses of Argand, oil, or gas lamps, or from the flames of candles, will, if received into a proper vessel, by which the entire products of combustion may be collected, prove equally, if not more, deleterious to animal life, than that which results from the combustion of an equivalent quantity of charcoal.

With a view to determine the amount of deterioration the air underwent in crowded assemblies, I obtained some air from a chapel in my neighbourhood, towards the close of the evening service, and, on examination in the ordinary way, it was found to contain a little more than one and a half per cent of carbonic acid. In another instance, I collected some air from the gallery of a crowded theatre, at eleven o'clock in the evening, about four hours after the commencement of the performances, and this I have found to contain about three per cent of carbonic acid.

The advantage which I conceive Joyce's stove to possess over the ordinary methods of burning charcoal for warming apartments, is the perfect control over the rate of combustion of the fuel; for while, in a common chafingdish or brasier, almost an unlimited quantity of charcoal may be consumed in a comparatively short space of time, and liberate very suddenly a large volume of carbonic acid, which might be prejudicial to health, if not absolutely dangerous; in these stoves, by their peculiar construction and arrangement of proper-sized apertures, the fuel can be consumed only at a certain given rate; and if they be properly adjusted to the size of the apartment they are intended to heat, my experience leads me to believe that no injurious consequences can arise from their employment.

JOHN T. COOPER.

82. Blackfriars Road, London, 14th June, 1838.

HAVING been present at the experiments made at Mr. Cooper's house, with a view of determining the degree of deterioration which the air suffers by the employment of Joyce's stoves in close rooms, and having examined, in conjunction with him, the composition of the atmosphere under such circumstances, I can certify that, after burning for twelve hours in a close room of the dimensions above stated, less than one per cent of carbonic acid was, in all cases, found in the air of the room; that such proportion of carbonic acid cannot be considered as deleterious, or in the least degree dangerous, in reference to respiration; that it falls short of the relative quantity of carbonic acid found in crowded and illuminated rooms, or in buildings in which many persons are congregated, such as churches, theatres, and assembly rooms, in

which ventilation is generally imperfect, and in which, as far as my experience goes, the relative proportion of carbonic acid always considerably exceeds one per cent. I am, therefore, of opinion that the said stoves, which are so constructed as to consume only a limited quantity of pure charcoal in a given time, may be employed with perfect security, for all the purposes for which they have been proposed; and I consider the grounds of this opinion sufficiently detailed by the experiments above given.

London, 14th June, 1838.

W. T. BRANDE.

To Mr. William Harper, 58. King William Street, London Bridge.

ART. XI. *Notice of certain Experiments made with a View to determine the relative Expansion of Iron and Masonry.* By THOS. U. WALTER, Architect of Girard College, Philadelphia. Extracted from Mr. Walter's "Fifth Annual Report to the Building Committee of Girard College."

THE expansible properties of iron having been a subject of considerable conjecture in reference to the bands for resisting the lateral pressure of the arches, I was induced to make an experiment for the purpose of discovering the actual difference of temperature produced in the middle of the walls, by the extreme heat of summer and the severest cold of winter.

Although I have never had an idea that any evil could possibly result from the expansion of the iron in question, by an increase of temperature, the materials which surround it being subject to an expansion almost (if not quite) equal to that of the iron, yet the satisfaction to be derived from positive evidence on the subject is sufficient to give interest to the experiment; I shall therefore give a brief account of the manner in which it was conducted, so as to enable you to judge how far the result may be relied on.

The place selected for the experiment was the brick wall between the south vestibule and the large rooms; the thickness of this wall is 5 ft. 5 in., and its distance from the south front of the cell 26 ft.; the sun had therefore full power upon it during the summer, and in the winter the whole building was covered with a temporary roof: I should also remark that the experiment was completed before any fires were made in the furnaces.

On the 23d of September, 1836, the temperature on the work being at 82° Fahrenheit, a self-registering *minimum* thermometer was placed upon the iron band in the middle of the wall, and the brickwork constructed as solidly around it as the rest of the building.

On the 29th of July, 1837, the temperature being again at 82°, a hole was made in the wall, and the thermometer taken out, when it was found that the register had descended to 42° during the intermediate winter, the extreme cold of which was 3° below zero: thus we find the greatest cold in the middle of the walls to be 42°.

On the 16th of January, 1837, the temperature on the building being 24° Fahrenheit, a self-registering *maximum* thermometer was placed on the iron band in the middle of the aforementioned wall, on the same horizontal line with the other thermometer, and about 60 ft. distant from it, a space having been left in the wall when it was built, for the purpose; which space was walled up around the thermometer as firm and compact as the rest of the work.

On the 16th inst., the temperature on the building being again at 24°, the walling was taken out, when it was found that the register in the thermometer had gone up to 61° during the intermediate summer, the greatest heat of which was 94°.

We have therefore 42° for the lowest temperature of the iron bars, and 61° for the highest, making a difference of 19°.

The expansion that an increase of temperature of 180° produces upon malleable iron, is given by Dr. Ure, in his *Dictionary of Chemistry* (p. 272.), as follows :

From experiments by Smeaton $\frac{1}{754}$ of its length ; according to Borda's experiments $\frac{1}{865}$ of its length ; and according to Dulong and Petit $\frac{1}{846}$ of its length.

Mr. Hassler (of New Jersey), in his "Account of Pyrometric Experiments," read before the American Philosophical Society, June 29th, 1817 (*Trans. Amer. Phil. Soc.*, n. s., vol. i. p. 227.), finds the expansion to be equal to $\frac{1}{708}$ of its length ; and in a work on Natural Philosophy, by Biot (*Phys. de Biot*, 1.), we have the experiments of Lavoisier and Laplace, made in 1782, giving an expansion, under the same increase of temperature, equal to $\frac{1}{819}$ of its length.

The trifling difference in these results may be attributed to a difference in the density of the material.

Now, if 180° will increase a bar $\frac{1}{754}$ of its length (this being the greatest expansion obtained by the foregoing experiments), 19° will lengthen it only $\frac{1}{7528}$; hence the bands around the rooms of the College (each being 54 feet long from the points of support) will be subjected to a difference in their length between the extreme heat of summer and the severest cold of winter, of $\frac{1}{7528}$ or $\frac{1}{12}$ of an inch.

This being the actual difference produced in the length of the iron bands, by the greatest change of temperature to which they can be subjected, it remains for us to consider the expansibility of the materials with which they are surrounded.

A table on the expansion of different kinds of stone, &c., from an increase of temperature, is given by Mr. Alexander J. Adie, civil engineer, in a paper read before the Royal Society of Edinburgh, on the 20th of April, 1835 (*Jour. Frank. Inst.*, vol. xx. p. 200.), in which he makes the expansion produced upon bricks by 180° of Fahrenheit equal to $\frac{1}{5818}$ of its length, or $\frac{1}{28}$ of an inch in 54 ft. under an increase of temperature of 19° .

If, therefore, the maximum expansion of one of the iron bands in the walls of the College is $\frac{1}{12}$ of an inch, and the brickwork surrounding it $\frac{1}{28}$, the difference is then reduced to nearly $\frac{1}{32}$ of an inch : but if we consider that the variation of temperature in the interior of the wall is only 19° , while the exterior is subjected to the extremes of heat and cold, it will be obvious that the aggregate expansion and contraction of the brickwork is even greater than that of the iron.

From these considerations, it is evident that not the slightest injury can possibly result from the use of iron in the construction of the College.

Girard College, Philadelphia, Dec. 30. 1837.

MISCELLANEOUS INTELLIGENCE.

ART. I. *Retrospective Criticism.*

PARSEY'S Convergence of Perpendiculars, &c. (p. 528.)—Permit me to reply to the enquiries which Kata Phusin has put to me in your last Number, and to answer his objections. And first, as to the full signification of the pronoun "we." It was not intended as an "editorial assumption," or to be extended to the "whole race of mankind," but to comprise that number of individuals of whose opinions and practice I had some knowledge. But in that number I certainly did include Kata Phusin, and for the following reason. Mr. Pocock had admitted the convergence of both perpendicular and horizontal lines, but denied that it ought to be represented ; he also asserted that, if Parsey's system were adopted, we should be under the "particular inconvenience," in viewing a picture, of holding our eye steadfastly and steadily in one precise

position, or else all the parts would be out of drawing; implying thereby that the system which Mr. Parsey wished to be superseded was free from that "inconvenience." Now, as Kata Phusin agreed in what Mr. Pocock admitted, I concluded that he agreed also in what Mr. Pocock asserted, seeing that he never, until now, ventured to contradict it; and my conclusion was the more reasonable, from the fact of my own experience, as far as it had extended, having convinced me that both artists, and the general public, not only did not practise the condition of which the "inconvenience" above mentioned is the result, but that they were not aware of it. Thus I answer Kata Phusin's second enquiry as to my want of charity towards himself; as regards the general public, I must plead my ignorance.

However, as Kata Phusin admits that there is but one place to stand in to view a picture, and, of course, that in any other place the picture will not convey a correct impression; and as he asserts that the intentions of the artists of the present day are, invariably, that their pictures should be viewed from a given point, and at a given distance; and further, that the practice, not only of connoisseurs, but of the general public, of all time, *is, has been, and must be*, to view every picture under such a condition; I will show that the adoption of such a condition in practice is not in accordance with the practice of the artist; and, moreover, that the difficulties or absurdities which would result from it are greater than those which would result from the approximation system.

The aim of the artist is to represent on a plane surface any object that he may be viewing, so that the representation may convey to the mind of another ideas vividly resembling those which the object created in him. Perspective is the art of doing this by mathematical rules. But the artist, he who is essentially such, who trusts to his own power of perceiving forms and their relative proportions, and of representing them with his pencil, is not dependent on the surface upon which he is drawing being held at one precise point and distance from the eye, in order to insure the entire truth of the forms he has delineated. At any distance, whether it is one foot or one yard, whether he looks up or looks down upon the surface, the truth of his representation is preserved. But, with the mathematical artist, the case is different, if he works by the rules of perspective which Kata Phusin defends. He then, as Kata Phusin admits, requires the spectator to determine upon one precise point of distance from his picture, before the truth of the representation will be evident; and then, when the spectator has determined this point, if he makes the slightest deviation from it, be it "but in the estimation of a hair," the whole work "is out of joint."

Let an artist sketch from nature the object *C O P D*, in figure 162. p. 428. Let the object represent a square column, 70 ft. in height, 10 ft. in breadth, and the distance of the artist from it 80 ft. Let the portion from *s* to the top, be divided into equal portions of 10 ft. each. Now, I am convinced that, if the artist be governed by his unsophisticated perception of form, he would represent every increasing portion of altitude, by a diminishing length, corresponding to the ratio on *s x*; without requiring, as Kata Phusin asserts it is the invariable practice of *all artists* to require, as a necessary condition to the truth of the delineation, that the surface be viewed from one precise point, and one precise distance only.

But, let a mathematical artist attempt to delineate this object by line and rule. He will set off the portions from *s* to the top of the column, of equal length, and make the length as *s x*. But on being told that, standing in the position which he did, the upper portion, in nature, appears considerably smaller than the lowest portion, in the words of Kata Phusin he will reply: "Ay, and the upper portion of my picture of the object will appear smaller, when you stand in the right place, for it is "necessary and natural for every one to put himself in the right place, and every one does so." Now, *s A* is the actual length of the column, and *s x* the portion of the retina affected; therefore, the proper distance to view the figure 162. (in order that *s x* may

produce the appearance $s x$ on the retina) is the distance $v s$, about 2 in. But, as 2 in. distance from the point s to the centre of visible direction is the right place to view $s x$, that is, with the eye about $1\frac{1}{2}$ in. from the paper, I will just ask Kata Phusin, if it is natural; that is to say, Has every one viewed the figure thus, or would every one view it thus? Kata Phusin is not absurd in saying that this is necessary, but he is excessively absurd in saying that this is the language or the practice of the artist, or the general public. But, as this illustration may be objected to, let us take one of Le Keux's architectural gems, about 4 in. in length. Now, according to Kata Phusin's mode of finding the right place to stand in, the distance should be the length of the altitude of an equilateral triangle, the base of which must be equal to the greatest length of the picture. This altitude will be about 3 in.; therefore, the right place for the picture to be viewed will be about 3 in. from the centre of the eyeball. Can any thing be more unnatural or absurd?

Kata Phusin says that "the great bone of contention, with the sticklers for represented convergence, is, that the perpendiculars in the picture do not subtend the same angle as the natural lines which they represent." This is false, for I have admitted the fact, although I have no positive perception of it. But what are the circumstances attending the admission of that fact? Why, that there is only one precise mathematical point from which a picture can be viewed, to have a correct impression from it; and that to discover this point requires such an exquisite perception of form, that, if to any being there were such

"finer optics given,"

he would be fit only

"T" inspect a mite, not comprehend the heaven."

I will conclude by observing that I cannot make out the force of the following objection. "If the right place to view a picture be 10 ft., every concession to the spectator who shall stand 15 ft., will be a double infliction on those who stand 5 ft. from it." But, whatever, may be the absurdity of the infliction implied, it cannot be greater than the following deduction from Kata Phusin's principle. All pictures hung with the horizontal vanishing line above the height of the eye, Kata Phusin admits, convey an erroneous impression of local truth. If, then, Kata Phusin hang a picture to meet the eye of a person 6 ft. high, he will inflict error on a person 5 ft. high. This is a greater difficulty than any in the approximation system. Admit it, then, to be a choice of difficulties. Is it then preferable to have a picture which will only convey local truth when viewed from one precise point; or, is it preferable to have one, which, in any position, shall give a more vivid resemblance than the other does when out of that position, or, perhaps, than when it is viewed from its proper position?—*Chappell Smith. Nov. 6. 1838.*

The present Number of the *Architectural Magazine* being the last, in order, if possible, to close the controversy between Mr. Smith and Kata Phusin, we sent the letter of Mr. Smith to Kata Phusin, from whom we received the following reply:—

Mr. Chappell Smith on Parsey's Convergence of Perpendiculars, &c.—In answer to Mr. C. Smith's observations, I may remark, first, that I never noticed the implied position of Mr. Pocock, or I should have disputed it long ago. The objection based on the minute size of engravings, even were it valid, would only prove that, in designs of such dimensions, certain allowances were to be made in fixing the vanishing points for our habits of contemplation, but it is *not* valid, and I intended the sentence at page 528., referring to vignettes, to anticipate it. Mr. Chappell Smith *must* have observed that, when an engraving less than 6 in. in the greatest diameter is terminated by decided edges, it has a strange, cutting, and harsh effect on the eye, which is totally unfelt as soon as we come to engravings more than 6 in. in diameter. He must also have observed that, in most small engravings, this disadvantage is obviated by losing the edge altogether, and turning them into the light and

lovely shapelessness of the vignette. This is done entirely to indicate to the eye that it is not a picture, but part of one, which it contemplates, and, therefore, that it is to choose a much greater distance of position than in the ordinary case. All the small engravings from J. M. W. Turner, are executed from water-colour drawings of the *same size*, and on this principle.* Le Keux's gems I do not know, but I am perfectly certain that (4 in. being their greatest dimension) they cut the eye if they are terminated by right lines, for this general reason, that the right line termination of the picture is always representative of the natural limit of the cone of rays proceeding to the eyeball, and encloses exactly so much of the scene as would be naturally visible without turning the eye: now the eye always receives rays converging at 60° ; therefore, unless the sides of the picture subtend the same angle, the terminations will hurt the eye, will cut distinctly upon the retina; and, therefore, no picture ought to be seen at a greater distance than that of the point where it subtends this angle.

With regard to engravings of 6 or 7 inches in diameter, if they are well executed, they cannot be seen farther off than 8 in., and the artist always makes an allowance for this slight excess of distance. With larger pictures, the fact of the correct distance being the natural one may be verified every day by observation.

The distinction which Mr. Smith institutes between the "artist" and mathematical artist is wholly ungrounded. No artist can design any drawing, except under the supposition of a fixed point for the spectator's eye. A perspective drawing, made on such a principle, will not hurt the eye, even when out of its proper place; but a drawing made on the supposition of the eye being any where will hurt it every where.

I am glad that Mr. Smith has admitted, even for the sake of argument, that the perpendiculars in the picture subtend the same angle, &c., for, if he once convince himself clearly of this fact, every difficulty will vanish on a little consideration.

As for the 5 ft. and 6 ft. objection, I have yet to learn that Mr. Parsey's system will enable the spectator to place his eye at any *height* he pleases. Mr. Parsey supposes a fixed horizontal, as well as in the old system; and the elevation of different persons must, of course, always affect their idea of the picture in his system, as well as in the old one. This "greater difficulty than any in the approximation system" exists in the approximation system itself. Finally, Mr. Chappell Smith assumes, in concluding, that an approximation *can* be obtained, which I distinctly deny. Mr. Parsey's system differs from the old one, not in allowing the eye to be in any place, but in putting it into the wrong place. For his system, as well as all systems, *must* suppose a fixed spectator; and when the spectator happens to be in the right place, or in any wrong place except the particular wrong place to which he has been appointed, it subjects him to the perception of error so flagrant and so striking, that I close the present discussion in most perfect confidence that Mr. Parsey's Principles will in a short time require no contradiction or dispute, but*will have received their tacit condemnation in the steady refusal of artists to admit their truth, and of the public to tolerate their practice. — *Kata Phusin. Oxford, Nov. 12. 1838.*

* See Rogers's Italy and Poems.

GENERAL INDEX

TO

VOLS. I. TO V.

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A.

- ABBATOIRS**, at Islington, vol. i. p. 90; query respecting, ii. 144; notice of some erecting in different parts of France, i. 242.
Abbey, Bath, additions to, ii. 139; improvements at, ii. 91.
Academy at Berlin, justification of the architecture of, ii. 239.
Æsthetics of architecture, ii. 34.
Air-Trap, retrospective criticism on Mr. Milne's, iii. 191.
Alarm-Thermometer, Kewley's, v. 334.
Allegory in architecture, the use of, iv. 1.
Almshouses for the Company of Tilers and Bricklayers being erected at Ball's Pond, ii. 465; Marylebone, iii. 139.
Amateurs and architects, comparative merits of, with regard to competition plans, ii. 197.
Amateurs, Society of, iv. 96.
American buildings, remarks respecting, ii. 190.
Ancient buildings of England, on the, iii. 70; on the establishment of a society for the restoration of, v. 162.
Ancient castles of Britain, essay on the, iv. 361.
Ancient church in Brittany, notice of an, v. 278.
Ancient domestic architecture, drawings of, ii. 424.
Ancient foundations and modern concrete, remarks on, iii. 79.
Ancient stained glass, v. 212.
Ancient theatres, and early dramatic entertainments, essay on, iii. 346; theatre of Catania, report on the last excavations in, iv. 456.
Ancient tomb, v. 280.
Anglo-Norman style of architecture, its applicability to modern ecclesiastical edifices, i. 288; exemplified in Illey church, Oxfordshire, i. 291; also at St. Mary's, Edge Hill, Liverpool, i. 292.
Anti-Vitruvianism, iii. 241.
Apartments, an experimental enquiry into the modes of warming and ventilating, iv. 161.
Apothecaries' Hall, Dublin, means adopted for securing decayed flooring at, and description of a metallic truss used, ii. 163.
Aqueduct of Lisbon, account of, ii. 87.
Arboretum Britannicum useful to architects, especially to those who combine landscape gardening, ii. 187.
Arbroath pavement, properties of, ii. 379.
Archæological and Topographical Institution, noticed, ii. 464.
Archæological Society of Athens, v. 381.
Arches of brick, principle of construction of, retrospective criticism on, iv. 263, 403.
Arches of laminated plates of iron, v. 623.
Arches of various dimensions, composed of wooden voussoirs, and of bricks, without cement, but having the aid of friction, and immovable buttresses at the base or foundation, experimental

- essays on, iii. 53. 113. 205. 354. 407. 502 ; iv. 63. 288. 373. 446.
- Arches, skew, on the construction of, iii. 251 ; iv. 90.
- Arch, Gothic, discovery of one of great antiquity, and curiosity in the crypt of the cathedral of Armagh, i. 96.
- Architects, alleged ignorance of, retrospective criticism on, iii. 47.
- Architects and amateurs, on the comparative merits of, with regard to competition plans, ii. 197.
- Architects and architecture of different countries, ii. 140 ; of England, literary composition of, ii. 470 ; present state of, i. 12.
- Architects, biography of, its usefulness, i. 95 ; deceptive practices by, i. 214 : emigration of, i. 90 ; to North America, i. 384 : German, the two greatest, of the present day, i. 276 ; practical education of, ii. 469 ; studies and qualifications necessary for, ii. 99 ; knowledge of perspective among, iii. 191 ; visits of foreign, to England, iii. 528.
- Architects, British, Institute of, iii. 39. 89. 131. 183. 229. 287. 335. 388 ; iv. 48. 90. 150. 207. 272. 348. 355. 408 ; v. 48. 143. 284. 356. 350. 430 ; remarks on, v. 1 ; retrospective criticism on their "Transactions," iv. 154 ;
- Architectural beauty of the metropolis, suggestions for improving, ii. 281.
- Architectural bookcase, design for, v. 598.
- Architectural competition, jobbing in, instances of, i. 211.
- Architectural début at the new apartments of the Royal Academy, iv. 301.
- Architectural design and construction, principles whence derived, i. 49.
- Architectural design as affecting the inferior arts connected with building, ii. 3.
- Architectural designs for villas, on certain deceptive practices adopted by some of the authors of, i. 117.
- Architectural designs, retrospective criticism on separate exhibitions of, iv. 403.
- Architectural drawings and designs, reasons for having an annual exhibition of them, distinct from the exhibitions of the Royal Academy of Arts, iv. 371.
- Architectural drawings and lectures, by Mr. Britton, i. 181.
- Architectural drawings, by Bruce, the traveller in Abyssinia, iv. 264 ; in the exhibition at Somerset House, criticised, ii. 313.
- Architectural exhibitions, i. 89.
- Architectural flower-garden and conservatory at Heathhouse, i. 47.
- Architectural forms, on public illuminations in accordance with, iv. 507.
- Architectural fountains, notice of some manufactured in artificial stone by Mr. Austin, i. 295.

Architectural improvements at Gravesend, iii. 237.

Architectural Magazine, criticism on, fit work for perusal by ladies, i. 246; object of the Conductor in undertaking, subjects which it will embrace, i. 1; proposed arrangement of, i. 10; retrospective criticism on, i. 212.

Architectural maxims, i. 80. 201; blank windows, pediments, imitation and invention, 236; criticism, imitation, criterion of excellence, 266. 309. 351; first conception, influence of beauty, i. 351; simplicity, unity of composition, chimney shafts, effects, ii. 33; iv. 572.

Architectural metaphysics, v. 636.

Architectural nomenclature, v. 495.

Architectural opinions of Forsyth, remarks on, ii. 148. 243. 293.

Architectural parallels, ii. 49. to 52.

Architectural pedantry, iii. 149.

Architectural plans, specimens of, studies of, i. 226.

Architectural prize, by the Institute of France, v. 276.

Architectural remains of the middle ages, brief hints for the preservation of the, v. 159. 230. 283.

Architectural representations, modes of, models, geometrical drawings, perspective drawings, ii. 452. 534.

Architectural science, remarks upon the present and prospective condition of, iii. 451.

Architectural Societies, i. 89.

Architectural Society, an endeavour to establish one in Yorkshire, ii. 319; at Manchester, v. 46. 280. 522; conversazione at, v. 331; of London, iii. 131. 581; iv. 92; laws and regulations of, ii. 513.

Architectural students, a useful practice for, i. 133.

Architectural subjects, rough notes on, v. 495.

Architecture, on the exclusive cultivation heretofore awarded to Greek and Roman, iii. 451; advantages of a taste for, i. 212; effects likely to be produced from giving the middling classes of society a knowledge of, iii. 496; and the arts, fragments connected with, v. 677; art considered with reference to, from the French of Quatremère de Quincy, ii. 53; a study suitable for ladies, i. 246; a summary view of the progress of, in Britain, in the year 1836, iii. 537; during the year 1837, iv. 553; during 1838, v. 529; causes of the different kinds and degrees of taste for, in different persons, i. 97; character in, i. 324; character of Italian and Grecian, iii. 337; classic forms of, their nature and origin, i. 16; comparative value and simplicity in, i. 103; considered as an art of imagination, i. 146; cyclopean, description of, i. 81; design for a villa in the Norman style of, i. 333; difference between common or imitative genius, and inventive or original genius in, i. 185; discourses upon, in England, i. 202; elements of Grecian and Roman, queries respecting, iii. 48; Elizabethan, examples of, accompanied by historical and descriptive accounts, i. 204; Elizabethan, Mr. Hakewill's pamphlet on, iii. 93. 96; empiricism in, how to check, i. 309; metaphysics of, iii. 245; exhibition of the competition designs for the Houses of Parliament, as a means for teaching the public some lessons in, suggested, ii. 552; best general work on, iii. 192; on genius in, i. 309.

Architecture, Gothic, iv. 484; according to Schlegel, v. 325; an attempt to explain the elements and principles of, to the general reader, i. 328; on the polychromy of, during the middle ages, v. 198; query respecting books on, iii. 388.

Architecture, Grecian and Roman, elements of, practically explained for the general reader, i. 108. 153. 259; Grecian, anticipated universality of, by Leo von Klenze, i. 275.

Architecture, harmony of enrichment in, i. 255; Hope's historical essays on, ii. 502. 538; iii. 52. 86. 129. 171. 225. 317; iv. 245. 529; v. 171. 317. 475. 611.

Architecture, in Britain, remarks on the present

state of, v. 1; in Europe, since the time of Michael Angelo, remarks upon, v. 617; in North America, on the rise, progress, and present state of, iv. 3; in Spain, iv. 497; in the British Provinces, in the year 1837, a letter on the state of, iv. 484; in the United States, America, state of, iv. 544.

Architecture, its claims as a fine art considered, i. 223; means of forming a just and correct taste in, i. 49; modeling in, iv. 271; modern, on the alleged degeneracy of, i. 148; national taste in, iv. 494; Nicholson's principles of, retrospective criticism on, iii. 331; notes on modern, iv. 474; v. 63. 215. 415; observations on the Anglo-Norman style, and its applicability to modern ecclesiastical edifices, i. 288.

Architecture, of Byzantium, iii. 33; of China, i. 315; of England, essay on the rise and progress of, iv. 420; of gin-palaces, v. 478; of Greece, resources of, design in, ii. 56; of horizontal lines, i. 30; of perpendicular lines, Romanesque or Norman, i. 31; of the London streets, i. 90; of New York, critical view of, v. 641; of Palladio, remarks on, ii. 202; of the Hindoos, i. 267; of the middle ages, remarks on, ii. 85. 234. 297. 429; on a sixth order in, iii. 3; on beauty in, iii. 49. 492; on competition in, iv. 240; on convenience in, ii. 333; on effect in, iii. 145; on form and beauty in, v. 392; on harmony as applied to, iii. 288; on order in, iii. 441; on the effect which should result to it, in regard to design and arrangement, from the general introduction of iron in the construction of buildings, iv. 277; on the importance of, ii. 193; on the philosophy of, v. 392. 581; on the principles of design in, iii. 393; iv. 457; on the use of allegory in, iv. 1; on uniformity in, i. 285; origin of Gothic, iv. 203; polychromy, iv. 89. 205. 618; principles of composition in, which are common to all the fine arts, i. 217. 249. 281. 321. 353; progress of in Turkey, i. 209; retrospective criticism on Britton's Dictionary of, v. 522; retrospective criticism on the Encyclopædia of Cottage, Farm, and Villa, iv. 503; Russian, derivation of from that of Byzantium, iii. 87; significations of the word a "Whole," iii. 1; in design, in elevation, in decoration, iii. 2; Soane's lectures on, i. 89; Spanish, iv. 594; study of the science of, by what recommended, i. 1; taste for, a mark of refinement, i. 3; the necessity of concord in, with reference to the production of a whole, ii. 241; the oldest and most sublime of all the arts, i. 309; the poetry of, introduction, iv. 505; Lowland cottage, England and France, iv. 555; lowland cottage, Italy, v. 7; mountain cottage, Switzerland, v. 56; mountain cottage, Westmoreland, v. 97; a chapter on chimneys, v. 145; concluding remarks on cottages, v. 193; mountain villa, Lago di Como, v. 241. 289. 337; lowland villa, England, v. 385; English villa, principles of composition, v. 433. 481. 533; the principles of taste with reference to, ii. 7; treatise on the five orders of, i. 129; unity of system in, ii. 1. 97; use of heraldic ornaments in, i. 188.

Arches of ellipses, reasons why they are pleasing to the eye, iv. 204.

ham, ii. 45.

Art, British artists and writers on, v. 273; what is it? v. 323; works of, whether they may be combined with the sublimity of nature, v. 625.

Artesian wells, supplying St. Pancras with water from, v. 621.

Artificial stone for pavements or flooring, i. 87; in the United States, ii. 464; made of sand and plastic clay in Dorsetshire, ii. 44; of Mr. Austin, various objects manufactured in, i. 159; ii. 123.

Artisans, on, iii. 52.

Artists' Conversazione, Newcastle, rules of, noticed, ii. 305.

Art-Union, a society for the advancement of the fine arts, object of the, iv. 262; v. 227.

Ashpans and hearths, proposed improvement on, i. 96.

Asphaltic cement, v. 228.
 Asphaltum, paving with, v. 45.
 Assembly Rooms, Edinburgh, defective ventilation of, ii. 28.
 Assize Courts at Devizes, tenders for, ii. 93.
 Athenæum at Exeter, i. 352; ii. 48.
 Athenian Olympium, ideal restoration of the, v. 105.
 Athens, architectural improvement at, i. 375; present state of, iv. 497.
 Azan, the town of, particulars respecting, ii. 463.

B.

Bakewell's brickmaking machine, ii. 93.
 Bank of England, dividend pay and warrant-office, iii. 109; new office in, completed, ii. 428; reported failure of the foundations of the, iv. 73; retrospective criticism on the, iii. 380.
 Bartholomew's Hospital undergoing improvements, ii. 466.
 Bath, an oval hip one, made of tin or copper, and serving also as a child's bath, foot-bath, and sponging bath, i. 92.
 Bath, improvements at, in the Abbey, ii. 91; alterations in streets; new road from, to Warminster; road from Bathwick to Stoke, ii. 92.
 Beaumont's fireproof buildings, query respecting, ii. 380.
 Beauty and deformity, account of a lecture on the elements of, i. 210.
 Beauty in architecture, iii. 492; on combining utility with, and preserving consistency in the decorations, iii. 49.
 Beauty, influence of, i. 351.
 Bed-rooms, ventilation of, i. 87.
 Bell towers and steeples, errors in the dispositions of, ii. 125.
 Berlin Academy, and four new churches built in the suburbs, critical remarks on, ii. 190; architectural improvements at, i. 88.
 Bernhardt's stove furnaces, official report on, by Dr. Ure, v. 31; reply to, v. 182.
 Birmingham Free Grammar School, i. 92; Market-place, i. 92; Town Hall, description and designs of, ii. 16. 92. 237. 325. 379; on the roof of the, ii. 380; iii. 430.
 Blackfriars Bridge, remarks on, ii. 428.
 Blacksmith's forge, or smithy, a portable one, i. 144.
 Blank windows, discussion on, i. 387.
 Blinds, painted transparent ones, of an improved construction, i. 127; Venetian, made of glass instead of wood, iv. 206.
 Blouet, M. G. Abel, author of the Baths of Caracalla, &c., iv. 311.
 Blunt and Stephenson's work, various omissions and inconsistencies in the plates of, ii. 47.
 Boiler for steaming food for cattle, simple and cheap, i. 48.
 Bond, John Linnell, obituary, v. 48.
 Bonnet blinds, or sun shades, a request for working drawings of, ii. 560.
 Bookcase, design for an architectural, v. 598; formed entirely of slate, or of slate and bricks on edge, i. 42; fireproof, i. 42; wardrobes, &c., proper construction of, i. 201.
 Boring and blasting rocks, new apparatus for, i. 93.
 Boring for water, a request for an article on the subject of, ii. 560.
 Bread-cutting machine, notice of a new, iii. 437.
 Brick bridges on railways, queries respecting wing walls of, iii. 334.
 Bricklayer, study of architecture by, i. 6.
 Brickmaking, art of among the Chinese, i. 125; in Egypt, how and by whom practised, i. 372; machines for, Bakewell's, i. 312; Cundy's and Fortnum's, i. 184.
 Bricks and brickwork, v. 411. 464. 514.
 Bricks, duty on, v. 619; 14 in. long and 9 in. wide, fine specimens of made in the 15th century, i. 210; proposed analysis of chemical and mechanical, i. 317.
 Brickwork, prime cost of a rod of, for a railway bridge in Kent, iv. 389.
 Bridge at Bellingham, notice of, i. 352; at Chester, critique on, i. 110; at Wellington, plans

wanted for the building of, ii. 91; Clifton suspension, iii. 90. 533; New London, query respecting, iv. 552; notice of one erecting from the North Parade to the Pulteney Road, over the Avon, at Bath, iii. 190; of the Nile, iv. 544; one of concreted rubble at Farly's Hope, in Selkirkshire, i. 278; one on the suspension principle between Rome and Naples, i. 207; remarks on the construction of Waterloo Bridge and London Bridge, v. 255; suspension, by Brunel, v. 624; suspension, near Wakefield, queries respecting, iii. 96; suspension, on the compensation principle, iv. 385.

Brighton, enlargement of, iii. 141.

British Museum, new buildings added to, iii. 328.
 Britton's address to the commissioners appointed to report on the designs for the new Houses of Parliament, ii. 504; lectures on castellated architecture, ii. 312.

Bruce, the traveller in Abyssinia, architectural drawings by, iv. 264.

Bruges stove improved, i. 77.

Buckingham Palace, account of the interior of, iii. 132.

Building, discrepancy between the estimate and cost of, ii. 358. 402; present state of the trade in, i. 12; Moorish manner of, iv. 205; old Fuller's ideas on, ii. 485.

Building on the Royal Kitchen-gardens, Kensington Gravel Pits, v. 620.

Buildings, a description of an easy method of whitewashing, or colouring the fronts of, in use on the Continent, iv. 387; erected at the public expense, a letter on the expedience of a better system of control over, and on rebuilding the Houses of Parliament, ii. 180; errors in altering or adding to, ii. 249; in Ireland, ii. 428. 524; in Hereford, 467; in Canton, i. 315; in the country, on the necessity of connecting them with the surrounding scenery by means of architectural embellishments, iv. 380; in unhealthy situations, v. 619; notice of a composition for rendering them fireproof, v. 326; observations on the modes of warming and ventilating public and other, iv. 313; on the effect which should result to architecture in regard to design and arrangement, from the general introduction of iron in the construction of, iv. 277; on the ventilation of large buildings by the intervention of openings in the windows, v. 258; ornamental, or characteristic for gardens and pleasure-grounds, i. 120; public, report on those in Paris for 1836, iv. 542; remarks on defacing, iv. 203.

Buttresses, of the laws relative to, iii. 205.

Byzantium, architecture of, iii. 33; derivation of Russian architecture from, iii. 87.

C.

Cabbling of columns, answer to query respecting, at p. 532, ii. 560.

Cabinet-maker's Sketch Book, extracts from, ii. 512.

Caen (Normandy), account of improvements in, iii. 526.

Cagnola, Marquis of, obituary, at Milan, i. 96.

Calculation of the prime cost price of a rod of brickwork for a railway bridge in Kent, iv. 389.

Camera lucida, notice of a new one, v. 276.

Camilla Cottage described, i. 48.

Canal and dock gates, &c., on certain improved methods of constructing valves or sluices, as applied to, iv. 209.

Canal parallel to the banks of the Rhine, from Basle to Strasburg, v. 277.

Canton, and other parts of China, mode of building in, i. 315.

Carpenters ought all to be more or less architects, i. v.

Carpet manufacture, recent improvements in, ii. 551.

Casement, waterproof, ii. 133; retrospective criticism on, iii. 94.

Cast iron and flag-stone, use of in the construction of fireproof floors and partition walls, i. 71; and slate, use of in household furniture, i. 41; beams, treatise on, and remarks respecting, ii.

- 138; plates, use of, instead of brick or stone at Blackwall Quay, i. 140; roof, notice of a corrugated one at Vauxhall, v. 66; use of, in forming angles for outside doors, i. 234; window and wooden shutter, adapted to warehouses, description of a, iii. 169.
- Castlereagh Meeting House, near Belfast, opened, ii. 518.
- Castles of Britain, on the ancient, iv. 561.
- Cathedral at Worcester, history and antiquities of, noticed, ii. 504; of Arnagh, important improvements making at, i. 278; of Chartres, iii. 384; v. 277; of Glasgow, description of, iii. 88. 522; retrospective criticism on, iv. 86.
- Ceilings of the middle ages, remarks on the, iv. 409.
- Cement, a new metallic, i. 46; asphaltic, v. 228; in India, i. 315.
- Cemeteries, on, iv. 426; provincial, account of, iii. 530.
- Cemetery companies, Bath general, iii. 533; the London, iii. 328; the South Metropolitan, iii. 328.
- Cemetery, in Sharron Vale, Sheffield, description of, iv. 81; new, at Frankfort, account of, ii. 135; proposed to be formed at Gateshead, ii. 91.
- Cenotaph to the memory of Sir Walter Scott proposed, i. 380.
- Centre, original design for, on the principle of the triangle, ii. 58.
- Chain bridge erected at the Hyde, Essex, description and engravings of, ii. 161.
- Chapel about to be erected in the Regent's Park, ii. 518; in Vincent Square, ii. 467; a new military one erected on the south side of St. James's Park, iii. 328; a new one recently completed at Herne Bay, iii. 90; Catholic, nearly completed at Cossey, ii. 91; design for one for a cemetery, iii. 562; one in the earliest pointed style now erecting at Bude in Cornwall, ii. 44; new Dissenters', in Barnsbury Street, Islington, iii. 139; new one in Clerkenwell, called the Northampton Tabernacle, iii. 41; notice of a new Independent one, in Spencer Street, Leamington, iii. 485; a new Independent one to be erected at Newton Abbot, Devonshire, iii. 279; a new one in Duncan Street, Islington, iii. 39; a Scotch one lately completed at Islington, iii. 139.
- Chapels of Ease, at Brightlingsea (Sussex), iv. 79; on Tottenham Green, iii. 190; at Charlton, Dorset, v. 623; perspective view of St. Mary's, Dublin, iii. 583.
- Chapel, retrospective criticism on Mr. Griffith's design for a, iv. 86.
- Chapels royal of King Henry VIII. at St. James's Palace, iv. 400.
- Character in architecture, i. 324.
- Charge of a surveyor, notice of an action brought by him for recovering it, iv. 331.
- Châteauneuf, M. de, of Hamburg, architect, notice of, v. 424.
- Chimney, account of an immense one, built at Carlisle; with suggestions for applying chimneys or cones, of immense height, to scientific purposes, v. 165; falling of a, at Rotherhithe, iii. 132; how to cure a smoky one, iii. 128.
- Chimney pipe for preventing smoke, in use in the neighbourhood of Barnsley, notice of, ii. 63; retrospective criticism on, iii. 333.
- Chimney pots and shafts, of Austin's artificial stone, durability of, i. 216; at Eastbury House, i. 144; superiority of low chimney shafts, properly constructed, over tall chimney shafts, constructed in the usual manner, iv. 84.
- Chimney top, arched-headed openings in, said to create a draught, i. 386; ornamental, a common error in designing, i. 63.
- Chimneys or cones of immense height, idea of applying them to scientific purposes, v. 165.
- Chimneys, smoky, cowl for curing, iii. 315; mode of curing and of ventilating the rooms at the same time, i. 232.
- China, architecture of, i. 315; mode of brick-making in, i. 125.
- Church at Stayley Bridge, v. 137; St. Isaac's at St. Petersburg, iii. 527; ancient one in Brittany, notice of an, v. 278.
- Church and tower at Hackney, iv. 598.
- Church architecture, essay on, iv. 566; of the middle ages, remarks on the, iii. 62.
- Church at Hooe, in Sussex, i. 211; at Huddersfield, i. 211; at Kraschen, description of the, with some remarks on the church architecture of the middle ages, iii. 62; at Stratford-le-Bow, iii. 482.
- Church, designs for, iv. 566; one at Potsdam, and four at Berlin, ii. 81; elevation, plans, and section of a, v. 223.
- Churches and chapels erecting in the country, ii. 93; suggestions from the Incorporated Society for promoting the Enlargement, Building, and Repairing of, iv. 45.
- Churches and parsonage houses, helps to the building of, iii. 35.
- Churches, notice of fifty new ones in contemplation to be erected in London, iii. 436; observations on the average cost per sitting of five churches and three chapels, lately erected in the neighbourhood of London, iii. 498; on the interior arrangement of, iv. 237; report on building new ones, i. 378.
- Churches of Rome, on the three hundred, iv. 97.
- Church in the Gothic style, at Clerkenwell, i. 90; at Islington, ii. 465; expenses for building, fitting up, &c., iii. 139; at Clapham, ii. 93; at Annandale, St. Ann's, Jamaica, v. 521; at Ashby-de-la-Zouch, v. 480; at Charmouth, v. 509; at Dorking, iii. 141; in Vincent Square, Vauxhall Road, iii. 139; St. Michael's at Bath, iii. 483; at Catterick in Yorkshire, i. 273; at Darmstadt, described, v. 521; at Hoyleke, i. 293; correction of the engraving, i. 381; of the Virgin Mary at Gillingham, Dorset, v. 623; at Stratford upon Avon, restoration of the chancel of, iv. 80; v. 139, 192; on the choice of a situation for a, v. 345; perspective view of, v. 509; ditto of Monkstown Church, Dublin, iii. 584; Protestant one in the Gothic style, lately completed in Paris, i. 242; St. Sepulchre's undergoing repairs, ii. 466; the first Christian, iv. 232; Trinity, at Shrewsbury, iv. 550; at Blackburn, Lancashire, iv. 598.
- Church towers, observations on, 485.
- Churchyard, on the laying out and planting of the, v. 345; retrospective criticism on, v. 624.
- Ceilings, painted, iv. 494.
- Cinquecento style, a list of edifices in the, v. 616.
- Circles, reasons why they are pleasing to the eye, iv. 204.
- Circus and theatre, notice of one building in Sheffield, Yorkshire, iii. 280.
- Civil engineering, lectures on, i. 208.
- Civil engineers, institution of, iv. 94; retrospective criticism on transactions of, iv. 154.
- Classic architecture; see Architecture.
- Clark's improved fire blower, i. 87.
- Classification and details of the architecture of the middle ages, ii. 429.
- Clock tower at Worthing, description of, i. 245.
- Closets and sitting-rooms, remarks on, i. 348.
- Club-house, the Reform, v. 136.
- Cock for boilers and kitchen ranges, of a new construction, i. 46. 240; criticism on, i. 390.
- Coldness of the feet, query respecting, ii. 95.
- College, Girard, for Orphans, Philadelphia, report on the, v. 327; some account of the, v. 446; experiments on the comparative expansion of iron and masonry in, v. 706.
- Column, observations on the principle of utility as governing the application of, ii. 225.
- Column to be erected at Truro, ii. 137; to the memory of Alexander I. in Petersburg, dimensions of, &c., iv. 205.
- Colour in monumental architecture, hints upon the advantages of, iv. 97.
- Colouring the architectural members and other parts of their religious and civil edifices, on the system and principles pursued by the Gothic architects, v. 198.
- Colours and drawing instruments, ii. 48. 322.
- Commons, House of, description of a new stove for heating the, v. 167; lighting and ventilating of, v. 87; v. 134.

- Companies, the London Water, iv. 595.
 Company, Hastings Improvement, iii. 330.
 Comparative advantages and disadvantages of various hot water systems, observations on, ii. 407. to 422.
 Comparative advantages of painting and papering, ii. 362.
 Competition designs, amusement afforded to architects in submitting, ii. 481.
 Competition plans, an instance of partial decision, ii. 484; judges of, ii. 12. 325; for Milbank Penitentiary, ii. 374; Licensed Victuallers' School, ii. 376; for the Houses of Parliament, ii. 374, 466; incompetency of the authors of the most showy designs to construct, ii. 143; remarks on the notice of in p. 143, ii. 283.
 Competitions, thoughts on the present system of, iv. 437.
 Concord in architecture, with reference to the production of a whole, ii. 241.
 Concrete foundations, composition and mode of using, by different architects and builders, i. 248; remarks on the modern way of making, iii. 79; notice of a premium for the best essay on, ii. 466; on the uses of, applied as artificial stone, buildings executed in, ii. 62; queries respecting, i. 320.
 Coningsburgh Castle, notice of the history and antiquities of, ii. 187.
 Conservatory, elevation and plan of one at Ditchley, Oxfordshire, iv. 549.
 Consistency, architectural, iii. 49.
 Consistency of style, as regards windows, ii. 145.
 Construction, hints on: No. 1. Introduction, v. 250; No. 2. Foundations, v. 304; No. 3. v. 361; No. 4. Bricks and Brickwork, v. 411; No. 5. Bricks and Brickwork, v. 464; No. 6. Bricks and Brickwork, v. 514; No. 7. Bricks and Brickwork, v. 577.
 Construction in arches, piers, buttresses, &c., experimental essays on the principles of, iii. 53. 113. 205. 354. 407. 502.; iv. 63. 288. 373. 446. 508.; of Waterloo Bridge and London Bridge, remarks on the, v. 255; of the oblique arch, retrospective criticism on Mr. Peter Nicholson's rule for the, iv. 266.
 Contrast and opposition, difference between, iii. 480.
 Convenience in architecture, ii. 333.
 Cooling and ventilating in warm climates, ii. 308.
 Cooking apparatus, Weeks's patent, descriptive account of, ii. 44. 64.
 Cooking by gas in Edinburgh, i. 93; farther experiments on, i. 94.
 Corehouse, mansion of, designed by Mr. Blore, i. 279.
 Corinthian capital, notice of a remarkable one in the Vatican, i. 357.
 Corner houses, plans for rooms adapted to, ii. 56.
 Corn Exchange, Manchester, about to be built, ii. 282.
 Corrugated cast-iron roof of the coal depôt of the London Gas Works, Vauxhall, v. 66.
 Cossey Hall, account of a model of, i. 183.
 Cottage, design for a labourer's, iii. 120; retrospective criticism on, iii. 285; elevation and plan of a, iv. 490; specifications for building, iii. 122; retrospective criticism on Bryden's design for, iii. 331.
 Cottage fireplace, notice of an improvement to a, v. 225; or gate lodge, in the Grecian style, v. 74.
 Cottages, Norwegian, as compared with those of Scotland, iv. 83; of Northumberland too frequently consist of only a very comfortable room, i. 91; practical instructions for building, suitable for the working classes, i. 314; specimen models from the Encyclopædia of Cottage Architecture, built in Shropshire, i. 94.
 Cottage villa, design for a, iv. 524.
 County Hall at Hereford, query respecting, ii. 476.
 Court-house at Leeds, alterations and improvements in, i. 211.
 Covent Garden Market, plans, views, and description of, v. 665.
 Cowl for curing smoky chimneys, iii. 315.
 Critic, qualifications of, i. 309.
 Crosby Place, London, architectural and historical account of, i. 130.
 Cross, difference between the Greek and Latin, and also that of St. Andrew, i. 95.
 Cross, Waltham, iii. 280.
 Cuir mûché, notice of, iv. 494.
 Curbed roof defined, i. 383.
 Custom-house, New York, description and engravings of, ii. 525.
 Cyclopean cottage erected at Redleaf, Kent, ii. 533.
- D.**
- Dairy and poultry-house should not be too near each other, i. 143.
 Dairy, how to keep one cool, i. 392.
 Damp foundations, mode of counteracting the effects of, even after the house has been built, i. 123; mode of preventing the rising of damp in the walls of buildings in clay and other moist soils, i. 233.
 Dance, R.A., George, library of, &c., iv. 311.
 Dean Forest, notice of a survey of, ii. 516.
 Decayed flooring at Apothecaries' Hall, Dublin, means adopted for securing, illustrated by engravings, ii. 165.
 Delineator, perspective, on the use of, ii. 459.
 Design for an architectural bookcase, v. 598; for a cemetery chapel, with remarks on the old method of burying, iii. 562; for an entrance lodge, iii. 314; for a labourer's cottage, iii. 120; for a labourer's cottage or gate lodge in the Grecian style, v. 74; for a lodge in the Italian style, iii. 512; for a national naval monument proposed to be erected in Trafalgar Square, Charing Cross, iv. 520; for a new town-hall wanted for a borough town, query to a, iv. 90; for a proprietary school, v. 70; for a small cottage villa, iv. 524; for a sofa, v. 604; for a suburban residence, v. 18; for a suburban villa, on half an acre of ground, in an unfavourable situation, iii. 464; for a suburban villa with two acres of ground, iii. 155; for a termination to a railway, iii. 219; for a turnpike lodge, remarks on, ii. 159; for a union workhouse, v. 510; for a villa, iii. 456; for a villa, comprising two distinct residences, v. 554; for a villa in the style of architecture of the thirteenth century, with illustrations, ii. 257; for the Birmingham new Town Hall, a claim for the sole merit of, ii. 237; on the principles of, iii. 393; iv. 457; retrospective criticism on Mr. Sopwith's principles of, iv. 89.
 Design, school of, iv. 350.
 Designs for a church, iv. 563; for buildings and other objects for gardens and pleasure-grounds, i. 120; for churches, &c., retrospective criticism on, iv. 600; for literary retreats, hints for, iv. 74; for the new Houses of Parliament, miscellaneous notices respecting the, iii. 103; for villas or country residences, Jones's work on criticised, ii. 299; ornamental, for the artist and decorator, i. 137; ii. 84; two, for monuments, v. 575.
 Desk, sketches for an architect's, v. 263.
 Dictionary of Architecture, retrospective criticism on Britton's, v. 522.
 Dining-room, proper position of, relatively to the kitchen, i. 95; proper disposition and arrangement of, ii. 228.
 Dining-rooms in London described, &c., iv. 147.
 Dining-tables, stands for the extra leaves of, i. 143.
 Dissenters' places of worship, a request for the insertion of plans of, ii. 192.
 Distribution of premiums, ii. 329.
 Dock gates, &c., on certain improved methods of constructing valves or sluices, as applied to, iv. 509.
 Domestic architecture, present state of, on the Continent of Europe, cottages, ii. 111; farm houses, ii. 116; villas, ii. 117; mansions, ii. 118; villages and towns, ii. 120; inns and shops, ii. 121.
 Domestic offices and living-rooms, ventilation of, i. 64.

- Doors, how they should be hung, i. 201. 386; iii. 144.
- Double door, design for a new description of, ii. 400; for preventing a draught in rooms, ii. 48.
- Dover, architectural improvements in, i. 209.
- Doweled floors, i. 319.
- Drains and traps, retrospective criticism on Mr. Milne's, iii. 286.
- Drawing, isometrical, various uses of, i. 369.
- Drawingrooms in London street houses, suggestion for the improvement of, iii. 168.
- Drawings of ancient domestic architecture, ii. 424.
- Dripping of water from shop-fronts on passengers, a mode of preventing, ii. 498.
- Drumlanrig, repair of the palace of, i. 94.
- Dry-rot, iv. 541; Kyan's patent for the preservation of timber from, ii. 236; v. 423; notice of Margary's process for preventing the, v. 284; remarks on, and causes of, ii. 361.
- Durand, architect, death of, ii. 284; biography of, iv. 351.
- Dwelling-house, instructions for choosing, i. 34; soil, situation, construction, ventilation, stability, light, air, roof, drainage, timber, i. 35; to 38; classification of, i. 38; fourth-rate, third-rate, second-rate, first-rate, i. 39; on the choice of, i. 166; windows, chimneys, fireplaces, floors, staircase, water, door and window fastenings, closets, i. 171.
- Dwelling-houses, notice of a new material to be applied to them to render them capable of resisting fire, v. 85.
- Dwelling-rooms of a house: dining-room provided with a musical instrument, ii. 275; a speaking pipe, ii. 276; fireplace ornaments, ii. 277; veranda, ii. 278; drawingroom arrangements, furniture, &c., ii. 348; to 358; library, its finishing and furnishing, ii. 404; the proper arrangement and disposition of the whole, ii. 59.
- Dwellings of the rural population in Norway, as compared with those of Britain and Ireland, v. 326.
- Dymond, George, obituary, iii. 48.
- E.
- Edinburgh, Commission for the Improvement of, i. 317; new approach road to, i. 93; Royal Institution at, ii. 319; Society of Arts at, i. 212; Trotter's plan for the improvement of, i. 205.
- Effect in architecture, iii. 145.
- Egg and anchor ornament, iii. 182.
- Egyptian oven, description of, ii. 177.
- Elements and principles of Gothic architecture explained to the general reader, ii. 214.
- Elizabethan architecture, Bakewell's attempt to determine the exact character of, noticed, ii. 369; criticised, ii. 470; iii. 93; queries respecting, iii. 96.
- Ellipses, arcs of, reasons why they are pleasing to the eye, iv. 204.
- Empiricism, how to check, i. 309.
- Encyclopædia of Cottage Architecture, effect of in Ross-shire, i. 94; in Stirlingshire, i. 94; in Perthshire, i. 94; in Ireland, i. 94. 138; in Yorkshire, i. 95.
- Engineering and mechanical works, query respecting, ii. 428; hydraulic, various improvements proposed in, iv. 209; in Spain, iv. 497.
- Engineers, Civil, retrospective criticism on Transactions of the Institution of, iv. 154.
- Engravings noticed, of Norwich Castle, Custom-house, New York, and Stonehenge, ii. 303; of the Pantheon Saloon, south window of Westminster Hall, remains of St. Stephen's Chapel after the fire of Oct. 16. 1834, ii. 186; three perspective views relative to the Houses of Parliament, organ screen in York Minster, buildings in Kew Gardens, ii. 515.
- Entrance lodge, design for an, iii. 314.
- Estates, the idea of taking bird's-eye views of, from balloons, iii. 530.
- Estimate and cost of a building, discrepancy between, ii. 358. 402.
- Estimates, a caution as to the making out of, ii. 317.
- Exchange in Hamburg, competition designs wanted for building an, iv. 149; new one at Glasgow, i. 391.
- Exchange, Royal, v. 88. 110; on the competition for, v. 265.
- Exeter Athenæum, mistake respecting the architect of, corrected, ii. 48; markets, iv. 311.
- Exhibitions, architectural, i. 89.
- Exhibition of architectural designs, distinct from that of the Royal Academy, proposed, iv. 371.
- External doors of dwelling-houses, improved metallic saddle for, ii. 493.
- F.
- Factories, a new mode of warming, i. 88.
- Fastenings for windows during high winds, queries respecting, iii. 96.
- Fauvel, M., obituary, v. 288.
- Felt for preventing the transmission of sound, &c., notice of Borradaile and Co.'s, v. 478.
- Fence, a wooden, without nails or screws, i. 79.
- Fences, wooden, dovetailed caps for, i. 235.
- Field gate, Buchanan's, i. 95.
- Filtering apparatus, notice of Fauvielle's, v. 278.
- Filters for purifying water, size and price of, iii. 130.
- Filtration, v. 143; essentials requisite for, v. 659.
- Fine arts in Germany, on the cultivation of the, iv. 49; on the difference between contrast and opposition in the, iii. 489; Society for the Encouragement of, in Antwerp, iv. 495; Society for the Improvement of, called the Art-Union, iv. 262.
- Finishings, interior, examples for, i. 136.
- Fire-blower, Clarke's improved, i. 87.
- Fire, doors to rooms should be hung on the side nearest the, iii. 144; hints for preventing damage by, in the construction and warming of buildings, ii. 75; remedies against, ii. 77; defects in applications of heat, ii. 79.
- Fires in London, cause of their frequency, i. 244.
- Fireplace, notice of an improvement to a cottage one, v. 225.
- Fire plates for the security of buildings, notice of a work on the use of, ii. 83.
- Fire-proof bookcases, i. 42; buildings, query respecting Mr. Beckford's house, ii. 284; notice of a trial of a new composition, &c. v. 85; safes, notice of, v. 143; walls and floors, use of cast-iron and flag-stone in the construction of, i. 71.
- Flooring cramp, improved form of, i. 96.
- Floors, doweled, defined, i. 319.
- Fluted columns, query respecting, ii. 332.
- Folding table brought from India, notice of a, iii. 170.
- Footpaths in the neighbourhood of towns, suggestions for the improvement of, ii. 134.
- Forms and lines, unity of expression in, essential to good architecture, i. 201.
- Forms, congruity of, i. 201.
- Forsyth's architectural opinions, remarks on, ii. 148.
- Foundations of concrete, mode of composing and using, adopted by different architects, i. 248; query respecting, i. 216.
- Foundations, on the construction of, &c., v. 304. 362.
- Fountains Abbey, eight views of, noticed, ii. 235.
- Fountains, architectural, notice of some designs for executing, in artificial stone, i. 295.
- Freemasons, and master masons, historical account of, i. 202.
- Freemasonry in Durham, i. 47; on the institution of, iii. 193.
- Freezing of water in pipes used for heating, ii. 96.
- Frame, streets of, lighted with gas, ii. 93.
- Funeral monuments of the Greeks, employment of painting on the, iv. 499.
- Funnel chimney at Rotherhithe, falling of a, iii. 132.
- Furniture, on, v. 27; cleaning of, i. 86; in the Louis XIV. style, specimens of, to be seen in London, i. 244.
- G.
- Gallery, National, critical view of the, iv. 19. 57. 400.
- Galloway, Bey, obituary, iii. 488.
- Garden engine, which may be lifted out of its frame, and the body of a common wheelbarrow,

or a large basket for carrying clothes, vegetables, manure, &c., substituted, i. 92.

Gas cooking apparatus, Mr. Rickett's, ii. 90.

Gas, heating by, in what buildings adapted, iv. 74.

Gas lights, hints for the contractors of, ii. 500.

Gates to canals and docks, approved methods of constructing, iv. 209.

Gauge, improved, a description of, ii. 500.

Geneva, improvements in the streets of, ii. 87.

Genius in architecture, difference between common or imitative, and that which is inventive or original, i. 185. 309.

German fireplaces, ii. 144. 240.

German silver, keys of, ii. 44.

Gin palaces, on the architecture of, v. 478.

Gin temples of the metropolis, i. 164; retrospective criticism on, iii. 94.

Glamorgan and Monmouthshire Infirmary, commenced, ii. 316.

Glass, cloth of, iv. 261.

Glyptotheca at Munich, retrospective criticism on, v. 90. 192.

Goodwin, obituary of, ii. 476.

Gothic architecture, iv. 494; according to Schlegel, v. 325; elements and principles of, explained to the general reader, i. 328; ii. 214; origin of, iv. 203; query respecting books on, iii. 388.

Gothic ornaments in papier mâché recommended, ii. 371.

Government House at Sydney, notice respecting, i. 276.

Grand Salle d'Exercise at Moscow, roof of, ii. 122.

Gravesend, architectural improvement at, iii. 237.

Grecian and Gothic styles of architecture, thoughts on the origin, excellencies, and defects of Grecian, ii. 105; Gothic, ii. 154. 204; progress of Gothic, ii. 250. 336. 384. 445.

Grecian and Italian architecture, character of, iii. 337.

Grecian and Italian tiles, iii. 96.

Grecian and Roman architecture, elements of, practically explained to the general reader, i. 108. 153. 259; exclusive cultivation of till lately, iii. 451.

Gridiron, a new kind, for carrying the fumes of broiling meat up the chimney, i. 47.

Guild-Hall, Market Place, and Grammar School, at Helston, Cornwall, ii. 44.

Guild-Hall and Market, at Penzance, design for, ii. 138.

H

Habit, effect of, on the taste and judgment, i. 201.

Hackney church and tower, iv. 598.

Hakewill's thoughts on the style to be adopted in rebuilding the Houses of Parliament, ii. 506.

Hall, a new county one at Inverness, i. 352; Masonic, a splendid new one at Tiverton, i. 373; new Goldsmiths', iii. 139.

Hall of Walhalla, a mountain near Regensburg, i. 276.

Hall, Town, design for, iv. 90; of Birmingham, i. 379; iii. 430.

Harbour of Holyhead, works in progress at, iv. 548.

Harmony in architecture, iii. 288.

Hatfield House, part of, destroyed by fire, iii. 140.

Heating a frame for growing cucumbers by hot water instead of dung, ii. 31.

Heating apparatus, forms of, iv. 541.

Heating by gas, Islington Church, and St. Michael's Church, Strand, ii. 552.

Heating dwelling-houses by hot water, ii. 308.

Heating hot-houses and other buildings by hot water, history of, i. 172; anticipated end of, ii. 474.

Heating rooms, &c., new mode of, v. 85.

Heraldic ornaments, use of, in architecture, i. 188.

Hindoo architecture illustrated, i. 267.

Hinges, notice of Howel's double-action door, v. 228.

Hirtt, Aloysius, obituary, v. 144.

Holborn Hill, examinations of various plans for improving, iii. 40; objections to certain plans for levelling, iii. 138.

Hospital, Foundling, notice of alterations and repairs in the chapel of, iv. 73; description of, with plans and elevation of the South Devon and East Cornwall Hospital, and Plymouth Public Dispensary, iii. 566.

Hospitals and sick wards, ventilation of, i. 229.

Hot water, origin and progress of the modes of heating by, i. 172. 358. 231; Perkins's mode of heating by, i. 212. 245; iii. 42; iv. 267. 355; systems of heating by, comparative merits of, ii. 407. 473. 519.]

House, domestic offices of, considered: the kitchen, i. 302; the coal-cellar, the scullery, i. 305; the larder, the cistern, i. 306; the beer-cellar and the wine-cellar, the housekeeper's room, the footman's room, or butler's pantry, i. 307; the passages, i. 308.

House, elephant's, in the Regent's Park Zoological Gardens, mode of heating the, iii. 189.

House-fly, Italian mode of excluding, ii. 188.

House for an invalid, v. 459.

Household furniture, use of slates and cast-iron in, i. 41.

House of Commons, description of a stove on a new construction for heating the, v. 167; lighting and ventilating of, v. 57; notice of a "new light" in the, v. 134.

House, on selecting the position of a, on the side of a hill, v. 29; the beau ideal of a comfortable one, iv. 84; see Dwelling-house.

House-painting, v. 178.

House with a private observatory, query respecting, iv. 271.

Houses, a word in behalf of modern, iv. 295. 550; for the humbler classes, instructions on the art of building of, ii. 71.

Houses of Parliament, iv. 597; Mr. Thompson's designs for the, retrospective criticism on, iii. 284; miscellaneous notices respecting the competition designs for the, iii. 103; new site for, suggested, and the fundamental principles on which they ought to be designed pointed out, iii. 100; on Barry's design for, iii. 400; on the exhibition of the designs for the, iii. 303; on the successful designs for the, iii. 249; principal plan and perspective elevation of a design for the, iv. 112; proposal for publishing the unsuccessful designs for the, iii. 97; remarks on the proposed site of the, iii. 303; remarks on the resolutions of the Committee for rebuilding of, ii. 381; remarks on the unsuccessful designs for the new, iii. 201; remarks on the ventilation of the, iv. 545; resolutions respecting the rebuilding of, ii. 311; retrospective criticism on designs for the, iii. 485; retrospective criticism on Mr. Thompson's designs for the, iii. 487; scraps of criticism on the designs for the, iii. 293; series of official documents relating to the competition designs for the, iii. 261; suggestions relative to the best models of style to be adopted in designing them, in the Gothic taste, v. 49; temporary reconstruction of, ii. 44.

Houses of the Britons preserved in Ross-shire, ii. 144.

Houses, street, iv. 151; where a corner is curved off, plans for rooms adapted to, ii. 56.

Howel's double-action door hinges, notice of, v. 228.

Huskisson, statue of, remarks on, iv. 77.

Hungerford new market, description and designs of, i. 53.

Hut, description of a Highland, iv. 83.

Hydraulic engineering, on certain improved methods of constructing valves or sluices, as applied to works of, iv. 209.

I

Importance of architecture, ii. 193.

Improvement and architectural beauty of the metropolis, suggestions for, ii. 281.

Improvement Company for Hastings, iii. 330.

India, railroad to, iii. 327.

India rubber paint, notice of a composition of

- India rubber and linseed oil used for coating over iron, iv. 348.
- Indigent Blind School in progress, ii. 466.
- Influence of locality on taste, i. 99; of education, of public opinion, of received prejudices, i. 101.
- Institute of British Architects; *see* British Architects.
- Institute of France, architectural prize offered by the, v. 276.
- Institutions: Belgrave New Literary and Scientific, iii. 328; City of London Literary and Scientific, v. 135; description of the Liverpool Mechanics', iv. 264; elevation and plans of the Liverpool Medical, iv. 383; Islington New Literary and Scientific, iii. 139; of Civil Engineers, iv. 94.
- Intensity of taste, i. 98.
- Intercolumniation, Wolff's ideas on, ii. 308.
- Interiors, on the fitting up of, iii. 555.
- Iron, laminated plates of, formed into arches, v. 623; on the effect which would result to architecture from its general use in construction of buildings, iv. 277.
- Iron wharfs, answer to query respecting, ii. 475.
- Iron-work, galvanisation of, to preserve it from rust, v. 284.
- Islington new church, ii. 465.
- Isometrical drawing, suitability of, for various purposes in architecture, surveying, &c., i. 369.
- Italian and Grecian architecture, character of, iii. 337.
- Ivory, William, obituary, iv. 96.
- J.
- Jet d'eau, account of one upwards of 80 ft. high, v. 227.
- Joyce's heating apparatus, report as to the safe and efficiency of, v. 703.
- K.
- Kent's dining-room, plate in, ii. 280; corrected, ii. 327.
- Kirk of Alyth, notice of the, recently erected in Perthshire, v. 572.
- King's Cross, completion of, iii. 41.
- Kitchen, a movable one, ii. 86.
- Kraschen, description of the church at, with some remarks on the church architecture of the middle ages, iii. 62.
- Kyan's patent for the preservation of timber from dry rot, ii. 236, 332.
- L.
- Labarre, M. obituary, i. 48.
- Lamb's villa, (p. 257.), critique on, ii. 377.
- Lamp-post, notice of an improved one in use in Edinburgh, i. 376.
- Lander's column, to be erected at Truro, ii. 137.
- Land-surveying, notice of a new instrument to be used in, for reducing the length of lines over undulating surfaces, v. 663.
- Lath and plaster partitions, how to render fire-proof, i. 40.
- Lecture room, a suitable plan required for, ii. 95.
- Leeds's plan for a room corrected, ii. 475.
- Leith Harbour, survey of, for improvement, i. 316.
- Levelling of Holborn Hill, model and plans of, ii. 466.
- Library at Cambridge, ii. 282.
- Library of Sir John Soane, remarks on, ii. 378.
- Library, Royal, France, a new building for the, iii. 235.
- Lifting window-shutters, answer to query respecting, iv. 271.
- Lightning, mode of protecting buildings from by straw ropes, i. 46.
- Light-houses, metallic, description of, iii. 281.
- Lighting the House of Commons, v. 87.
- Light, new method of diffusing through a theatre, i. 276.
- Literary composition of architects and surveyors, ii. 470, 519, 554.
- Literary retreats, hints for designs for, iv. 74.
- Liverpool, buildings at, iii. 582.
- Liverpool Mechanics' Institution described, ii. 467.
- Living-rooms and domestic offices, ventilation of, i. 64, 213.
- Locomotive engines on railways, a treatise on, preparing for publication, ii. 516.
- Lodges, design for one in the Italian style, iii. 512; entrance, design for, iii. 314; in the Grecian style, v. 74.
- London Bridge and Waterloo Bridge, remarks on the construction of, v. 255.
- London Docks, method of removing soil at, ii. 501.
- London street houses and shop fronts, remarks on, i. 113; iii. 168; v. 329.
- London, suggestions for the architectural improvements of, i. 177, 382; v. 134, 136, 330; the squares of, v. 328.
- London University, and the new National Gallery, porticoes of, i. 317.
- Luxor Obelisk at Paris, iv. 464; a suggestion as to the manner in which the dilapidated apex of it should be restored to its original form, iv. 550.
- M.
- Macadamised roads, thickness of metal on, v. 621.
- Maceroni's expositions and illustrations regarding steam power noticed, ii. 304.
- Machine, for raising water from the Seine, notice of a new hydraulic, iv. 149; notice of a newly invented bread-cutting, iii. 437.
- Madeleine, Paris, nearly completed, ii. 86.
- Manchester Architectural Society's *Conversazione*, v. 331; Corn Exchange, misapplication of classic architecture.
- Mansion House, improvements at, iii. 40.
- Manufacturing population and the fine arts, ii. 465.
- Marbles of the Pyrenees, very cheap at Toulon and Bordeaux, i. 309.
- Marble table, with a cast-iron pillar, i. 308.
- Markets at Exeter, i. 352; the Western, iv. 311; at Knightsbridge projected, i. 90; Covent Garden, plans, elevations, views, and description of, v. 665; description, designs, &c. for the Exeter, Higher Market, iii. 12; specification of artificer's work, iii. 16; House and Town Hall of Lutterworth, iii. 569; Hungerford New, description and engravings of, i. 53; Islington Cattle, iii. 189, 278; St. John's, Liverpool, description and engravings of, and notice of other markets.
- Masons, advantage of the study of architecture to, i. 6.
- Masons, master and free, historical account of, in England, i. 202.
- Materials, report on the present knowledge of the strength of, ii. 83.
- Mathematical instrument for drawing noticed, ii. 281.
- Mattresses, query on Capt. Wildey's new stuffing for, iii. 440.
- Maxims, architectural, i. 128; ii. 179.
- Measurement of timber hydrostatically, v. 86.
- Mechanics' Institution, Liverpool, projected, ii. 317; described, ii. 467; iv. 264.
- Metallic lighthouses, description of, iii. 281.
- Metallic saddle for the external doors of dwelling-houses improved, ii. 493.
- Metallic trusses, Mr. Mallet's article on, noticed, ii. 329.
- Metaphysics of architecture, essay on, iii. 245. v. 636.
- Metal, Wellerstedt's patent marine, iv. 498.
- Method of supplying dogs with water during the summer months, ii. 499.
- Metropolitan improvement, Mr. Rainy's plan for a, iii. 309.
- Metropolis, gin temples of the, retrospective criticism on, iii. 94.
- Middlesex County Hall, want of, ii. 88.
- Mill-post, an improved form of, i. 78.
- Milestone, an idea for, ii. 536.
- Mining districts of Allstone Moor referred to, ii. 304.
- Modelling, architectural, iv. 271.
- Model of a cooking apparatus of a new construction, ii. 137.
- Modern architecture, alleged degeneracy of, i. 148.
- Modern houses, retrospective criticism on a word in behalf of, iv. 502.
- Modes of architectural representations:—models,

- geometrical drawings, perspective drawings, ii. 452.
- Monumental architecture, hints upon the advantages of colour in, iv. 97.
- Monument, design for a national naval, iv. 520; Duke of Wellington's, iv. 206; Duke of York's, plan and description of, i. 192; effects of the lightning on the Melville monument, struck on July 14, 1837, v. 181; Huskisson's, at Liverpool, described, i. 277. 381; ii. 240; notice of Madame Malibran's, iv. 594; notice of the Duke of York's, in Edinburgh, v. 228; of the late Duke of Sutherland to be erected on the summit of a mountain, i. 381; Sir Walter Scott's, ii. 320; iv. 600; best situation for, v. 625: the Wellington, iv. 597: to the Earl of Plymouth, ii. 94; to the memory of the Duke of Berri, notice of, ii. 87; to Thomas Telford, esq., ii. 517.
- Monuments, two designs for, v. 575; are architectural monuments only to be erected among architectural objects? v. 499; in churchyards, remarks on, v. 519; public sites for, iii. 327; tombs and chimney pieces, ii. 185.
- Morgan's apparatus for heating and ventilating, query respecting, ii. 95.
- Mortar, women the carriers of, at Vienna, i. 243.
- Museum, British, new buildings added to, iii. 328; Fitzwilliam, at Cambridge, rebuilding of, i. 316. 378; iii. 41.
- N.
- Naples, roads in the kingdom of, i. 207.
- National Gallery, i. 90. 138. 317; ii. 89; iv. 19. 57.
- Naval monument, design for one proposed to be erected in Trafalgar Square, iv. 520.
- Newcastle and Carlisle railway opened, ii. 318.
- Newcastle, great improvements going forward in, i. 352.
- New York city, street houses of, ii. 490; v. 641; Custom-House, descriptive account of the improvements made at, ii. 525.
- Nicholson, Mr. Peter, meeting of his friends and admirers, i. 140.
- Norman architecture, design for a villa in that style, i. 333; cause of the duration of, ii. 138.
- Note-Book, Candidus's, iii. 500. 557; iv. 70. 116. 190. 241. 326. 480. 513; v. 15. 219. 367. 442. 565.
- North America, rise, progress, and present state of architecture in, iv. 3; v. 641.
- Notice of an action brought by a surveyor to recover his charge for making certain calculations, iv. 331.
- Norwich Castle, notice respecting the repairs of, ii. 91.
- Nuneham Courtnay, architectural improvements at, i. 92.
- O.
- Obelisk, method of building one without scaffolding, as adopted by T. Slacks of Langholm, v. 502.
- Obelisk of Luxor, discussion as to where it should be erected, i. 46. 374; elevated in Paris, account of the, iv. 464; reference to engravings of, i. 245.
- Obelisk on the hill of Broomsgrove Lickey, i. 379.
- Obelisks, remarks on, iv. 464; remarks on that erected in Cheapside, v. 373.
- Obituary, M. Labarre, i. 48.
- Observatory, Liverpool, v. 330.
- Office, Bank of England, Dividend, Pay, and Warrant, iii. 109.
- Office in the Grecian Doric style, erected for Mr. Solomon Rothschild, in Swithin's Lane, iii. 40.
- Old Fuller's ideas on building, ii. 485.
- Oratory in the Abbey Church, Bath, Gothic ornaments of, i. 131.
- Order in architecture, principle of, iii. 441.
- Organ screen of York Cathedral, notice of the engraving of, ii. 85.
- Origin, excellencies, and defects, of the Grecian and Gothic styles of architecture, thoughts on: Grecian, ii. 105; Gothic, 154. 204; progress of Gothic, ii. 250. 336. 384. 445.
- Ornamental designs for the artist and decorator noticed, ii. 84.
- Ornament; on the effect of it according to its disposition, v. 324.
- Ornaments employed in architecture externally, a want of taste in, ii. 15.
- Oven, an Egyptian, description of, ii. 177; roasting, improved modes of constructing, i. 47. 72.
- P.
- Painted architecture, v. 618.
- Painted glass, notice of specimens of, v. 136.
- Painter cannot exercise the higher departments of his profession without a knowledge of architecture, i. 7.
- Painting and papering, comparative advantages of, ii. 362.
- Painting on the funeral monuments of the Greeks, employment of, iv. 499.
- Painting-room, queries respecting the erection of, iii. 96; answer, iii. 334.
- Palace, account of the new one, at Brunswick (Germany), iii. 527.
- Palaces and ruins of the middle ages, remarks on, iv. 409.
- Palace, Buckingham, account of the interior of, iii. 132; M. von Raumer's opinion of, iii. 137.
- Palaces, gin, on the architecture of, v. 478.
- Palace of the Duke of Sutherland, v. 328.
- Palace of Wilhelmsburg at Brunswick, notice of, iv. 504.
- Palladian architecture, and Forsyth's architectural opinions, ii. 202. 322. 468.
- Palladian architecture criticised, ii. 468.
- Pantheon Bazaar, i. 91. 184.
- Paper for rooms, new, an account of, ii. 498.
- Papier mâché, ornaments in, ii. 49. 371.
- Paragetting, the best composition for, i. 184.
- Paris, improvements and embellishments in, iii. 325. 384; iv. 542.
- Parliament, both houses of, burned to the ground October the 16th, 1834, i. 377.
- Parliament, Houses of, iii. 97. 100. 103. 249. 261. 284. 293. 303. 400. 435. 485. 487; on the designs for, iii. 9; on Mr. Peter Thompson's model of his design for, iii. 435; plan and elevation for, iv. 112; remarks on the ventilation of, iv. 545; resolutions respecting the rebuilding of, ii. 311. 381; suggestions relative to the best models of style for imitation in designing them in the Gothic taste, v. 49; temporary houses of, criticised, ii. 44. 136.
- Parsey's convergence of perpendiculars, iii. 437. 439; iv. 518; v. 91. 94. 140. 282. 425. 523. 525.
- Parsonage houses and churches, helps to the building of, iii. 35.
- Partitions of lath and plaster, how to render fire-proof, i. 40.
- Pavement, Arbroath, properties of, ii. 579.
- Paving with asphaltum, v. 45; with blocks of wood, ii. 428; iv. 497.
- Pedantry, architectural, iii. 149.
- Penrhyn Castle, building by Mr. Hopper, one of the largest private residences in Britain, i. 93.
- Perfect taste, i. 99.
- Perkins's mode of heating by hot water, retrospective criticism on, iv. 267.
- Perspective and projection illustrated, ii. 211.
- Perspective delineator, on the use of, ii. 459. 557.
- Perspective investigated, iii. 422.
- Perspective plane, on the, iv. 181; retrospective criticism on Mr. Edmond's, iv. 268.
- Perspective rectified, retrospective criticism on review of Parsey's, iii. 437. 459. 534.
- Perspective, remarks on the convergence of perpendiculars, iv. 518; v. 91. 94. 140. 190. 228. 282. 425. 523. 526; retrospective criticism on architects, respecting their knowledge in, iii. 191; writers on, iii. 388.
- Philosophy of Architecture, by Weinbrenner, v. 592; v. 581.
- Philosophical Society to be instituted at Edinburgh, ii. 283.
- Pier at Woolwich about to be erected, ii. 282.
- Pier, on the suspension principle, i. 47.
- Piers and buttresses, of the laws relative to, iii. 505.
- Piers at the angles of buildings, carrying arches over doors and windows, experiments made for the purpose of ascertaining the necessary strength of, v. 408.

- Piles; wooden ones eased with sheet iron, to protect them from minute marine insects, i. 352.
 Pillar, dimensions of Pompey's, iv. 590.
 Pipes, water conducted in, by the ancients, i. 573.
 Plan, an English version of a French, iii. 573; iv. 28.
 Plan of the parliamentary and other buildings adjacent to Westminster Hall noticed, ii. 464.
 Plans, architectural, specimens of studies of, i. 226; a circumstance showing the evil results of not employing a proper person for the preparation of, ii. 138; competition, incompetency of the author of the most showy design to construct, ii. 143; for the County Hospital, Berkshire, exhibition of the, iv. 151; for rooms of street houses, ii. 393.
 Plaster casts, colouring of, i. 248.
 Plasterer; necessity of his studying architecture, i. 7.
 Plate-warmer, an improved form of, i. 216.
 Pointed architecture, Hlope's theory respecting, v. 476; enquiry into the claims of England to the invention of, v. 611; of France and Italy, of Germany, v. 612; observations on the reviving taste for, with an illustrated description of a chapel just erected, ii. 342.
 Polychromic architecture in Germany, iv. 205.
 Polychromy of Gothic architecture, during the middle ages, v. 198.
 Pompey's Pillar described, iv. 590.
 Portable roasting apparatus for kitchens, i. 92.
 Porticoes of the London University, and the new National Gallery, i. 317.
 Portland stone, the beauty of, destroyed by painting, ii. 315.
 Portuguese architects, and architects of other countries, ii. 140.
 Post Office, retrospective criticism on the, iii. 330.
 Practical carpentry, a hint for a new mode of teaching, ii. 192.
 Precedents, professional, iv. 45. 146. 341.
 Premiums, distribution of, ii. 329.
 Preston, Lancashire, remarks on the improvements at, ii. 316.
 Price-Book, Laxton's improved builder's, ii. 83.
 Prince William's Palace, Berlin, noticed, ii. 189.
 Prison at Tothill Fields, i. 90. 208; notice of Lebas's model for one, iv. 149.
 Private houses, a request for designs of, ii. 192.
 Projection, isometrical, remarks on, ii. 142. 477. 519.
 Professional precedents: No. 1., churches and chapels, iv. 45; No. 2., a shire hall and courts of justice, iv. 146; No. 3., contract for building new churches, iv. 341.
 Public buildings, remarks on defacing, iv. 203.
 Public granary to be erected at Salisbury, ii. 282.
 Pyramid of Cheops, a model of lately exhibited, i. 91; account of a lecture on, i. 208.
- R.**
- Railroad across the Isthmus of Panama, iv. 205; near Vienna, v. 280; between Petersburg and Tzarskojeselo, iv. 262; Dublin and Kingston, blunders committed by the engineers of, i. 317; from Paris to London, ii. 86; railroad to India, iii. 327.
 Railroads, v. 273; in Austria, v. 280; Ruthven's improvement on iron rails for, iv. 591; in Ireland, notice of, v. 424.
 Railway, design for a termination to a, iii. 219; experimental, laid down by Mr. Hawkins, at Camden Town, i. 90.
 Railways, notice of a new lamp for, iv. 83; Ranger's artificial stone, i. 47.
 Refined taste, i. 98.
 Regulations of the Institute of British Architects, remarks on the observations respecting at p. 470., ii. 555.
 Religious and civil edifices, on the system and principles pursued by the Gothic architects, from the 11th to the 15th centuries inclusive, in embellishing by colour the architectural members and other parts of them, v. 198.
 River dams, on the proper construction of, v. 261.
 River wall at Woolwich Dock, i. 391.
 Road-making, notice of a new composition for, iii. 530; the best practical treatise on, iii. 239.
 Roads in the kingdom of Naples, i. 207; metropolitan, drainage of, i. 91; on steam carriages on common, v. 274; thickness of metal on macadamised, v. 621.
 Roasting oven, an improved construction of, i. 72.
 Rocking chairs, description of two American kinds, v. 664.
 Roller blinds now made octagonal, instead of cylindrical, i. 95.
 Roman walls, construction of, ii. 191. 380.
 Rome, on the three hundred churches of, iv. 97.
 Roof, curved, defined, i. 383; notice of a patent, v. 281; C. B. W.'s original design for a, retrospective criticism on, iii. 95. 142; of the Birmingham Town Hall, ii. 48; iii. 380. 430; of the Grande Salle d'Exercice, Moscow, ii. 122.
 Roof tie, new method of forming, ii. 495.
 Roof, truss for one of a large span, iv. 87.
 Roofs, a new flat tile for covering, iii. 183.
 Round Tower, 76 feet high, erected at Muthil in commemoration of reform, i. 381.
 Royal Academy, letter to Lord Brougham on the history and character of, noticed, ii. 367.
 Royal Exchange, v. 88; on the competition for the, v. 265; remarks on competition designs for rebuilding the, v. 110.
 Royal Academy, the architectural début at the new apartments, iv. 301.
 Russel stove, remarks on, i. 74.
- S.**
- Safes, fireproof, notice of, v. 143.
 St. James's Park, proposed entrance to, i. 316.
 St. John's Market, Liverpool, an account of, ii. 129.
 St. Sepulchre's Church undergoing repairs, ii. 466.
 Sand, pure white of Sydney, important uses of, i. 89.
 Sarcophagus; dimensions of a beautiful granite one from Egypt, lately placed in Hamilton Palace, i. 278.
 Sashes, improvements and contrivances in, iii. 203; retrospective criticism on Whiting's patent, iv. 88.
 Sash suspender, Cowell's patent, iv. 72.
 Saving's Bank at Hull now erecting, i. 142.
 Scaffolding, a new holdfast for, iii. 30.
 Scabbld poles, mode of securing, iii. 144; retrospective criticism on, iii. 143.
 Schinkel's Entwürfe, various designs in, noticed, ii. 365.
 School, City of London, iii. 138; design for a proprietary, v. 70; for the deaf and dumb, contemplated, ii. 282; for the indigent blind in progress, ii. 466; erecting at Wakefield, i. 142; notice of a new Blue Coat one at Reading, Berkshire, iii. 531; the Blue Coat, notice of some houses in Newgate Street pulled down, for throwing open the south front of the hall to view, iii. 140; the Charter-house, architectural improvements at, iii. 40.
 School of Design, iv. 350; formation of a, in Manchester, v. 178.
 School of Science, object of the, iv. 349.
 Science, architectural, remarks on, iii. 451.
 Scott, Sir Walter; what would be the most appropriate situation for his monument in Edinburgh, v. 625.
 Sculpture in wood, a historical sketch of the art of, ii. 547.
 Sculpture and Picture Galleries at Munich, noticed, ii. 190.
 Sculpture, on Chantrey's, by Professor Raumer, iii. 326.
 Sea-water, mode of separating, from its salt, suitable for adopting in long voyages, i. 244.
 Serjeant's Inn, Chancery Lane, v. 88.
 Sewers, queries concerning Roman, iv. 600.
 Shire Hall and Courts of Law erecting at Worcester, ii. 282.
 Shop fronts improvement in, i. 382; notes on modern, iv. 298; original designs for, i. 239.
 Shower-bath, description of a cheap portable, v. 468.

- Shutters, description of revolving, iv. 79; for shop windows, method of securing outside ones, i. 357; lifting window, query respecting, iv. 271; sliding, query respecting, iii. 192.
- Sideboard of slate, i. 42; for a small room, i. 241.
- Sideboard, or shelves, of marble or slate, disadvantage of, till servants are accustomed to them, i. 95.
- Signor Scotti, an Italian civil engineer, iv. 75.
- Simplicity in architecture, comparative value of, i. 103.
- Sir Walter Scott, proposed cenotaph to the memory of, i. 380.
- Sitting-rooms, closets in, remarks on, i. 348.
- Skew arches, on the construction of, iii. 251.
- Slamming of a passage door, how to prevent effectually, i. 126.
- Slate and cast iron, how employed in household furniture, i. 41.
- Slate, sideboard of, i. 42; inconvenience of, i. 95; slabs of, substituted for sleepers for iron rails, used for shop floors, for foot pavement, for fire-proof partitions, &c. &c., i. 241; the uses of, iii. 130; use of, for dairy shelves, skirting, wall linings, window-sills, &c., and manner of working, i. 143; use of, in forming shelves to fire-proof bookcases, i. 42.
- Sluices, or valves, on certain improved methods of constructing valves, as applied to canal and dock-gates, &c., iv. 209.
- Smallwood, W. F., obituary, i. 184.
- Smoke, in public rooms and in dwelling-houses, defective ventilation, causes of, ii. 27; Mr. Coade's plan for consuming, iv. 76.
- Smoky chimney, how to cure, iii. 128; pipe for preventing, retrospective criticism on, iii. 333; method of curing, ii. 496; method of curing, which also ventilates the room, i. 233; criticism on the mode of curing, i. 390; query as to the best method of constructing flues to prevent, ii. 560.
- Soane, Sir John, memoir of, i. 310; notice of his house in Lincoln's Inn Fields, i. 311; library, remarks respecting, ii. 378. 424; remarks on the architectural museum of, ii. 247; obituary, iv. 157.
- Societies, architectural, i. 89; iii. 131; v. 280.
- Society for the Encouragement of the Fine Arts, Antwerp, iv. 495; of Amateurs of Art, iv. 96; of Arts, iii. 132; of Athens, the Archæological, v. 381; Manchester Architectural, v. 280; notice of a Town-Embellishment, iv. 594.
- Sofa, design for a, v. 604.
- Solomon's Temple, historical notice of, v. 144.
- Somerset House, exhibition of, for 1834, i. 181.
- Sound, Borradaile and Co.'s patent felt for preventing the transmission of, v. 478; experiments on the communication of, i. 142.
- Spain, architecture and engineering in, iv. 497.
- Specification for building a labourer's cottage, iii. 122.
- Spring for shutting a door which opens both ways, Beattie's new, ii. 553.
- Spire of a church set straight by Mr. Trubshaw after it had deviated from the perpendicular 5 ft. 11 in., i. 209.
- Squares of London, v. 328.
- Stained glass, ancient, v. 212.
- Stamped and baked clay of the fifteenth century, forming bricks 14 in. long by 9 in. wide, fine specimens of, at Sutton Place, Surrey, i. 210.
- Statue at Golspie, to the memory of the Duke of Sutherland, v. 480; at Paris, notice of, ii. 87; of the late Mr. Huskisson, account of, and remarks on, iv. 77, 78; of Valpy, notice of, v. 621.
- Steam carriages on common roads, v. 274. †
- Stencilling, instead of penmanship, for the writing on plans, ii. 85.
- Stone, Francis, obituary, iii. 48.
- Stone, notice of a collection of all the different kinds of, found in the United Kingdom, being made by the Commissioners of Public Works at Whitehall, iv. 456; on the expansibility of the different kinds of, ii. 517.
- Stone-planing machine, account of Hunter's patent, ii. 283. 331; iii. 530.
- Story posts, strength of, ii. 329.
- Stove, an improved ironing one, i. 92; with improved fuel, notice of Harper and Joyce's, v. 84. 275; description of one on a new construction, for heating any large apartment, or the House of Commons, v. 167; Dr. Arnott's, iv. 154; retrospective criticism on, v. 230; for heating by gas, ii. 90; Mr. Russell's, i. 74; new, for heating the House of Commons, v. 167; Bruges, i. 77.
- Stove-furnaces, official report upon Bernhardt's, v. 31.
- Stove-grate, query respecting, ii. 284.
- Stratford Church, remarks on the chancel of, iv. 80.
- Street architecture, house fronts, ii. 524; remarks on, ii. 389; a neat street house in the Elizabethan style, ii. 393; remarks on, iii. 67.
- Street houses and shop fronts in London, remarks on, i. 113; iv. 151; v. 329; of the city of New York, ii. 490; plans for the rooms of, ii. 393.
- Streets paved with wood, notice of, iv. 497; improved mode of paving, iii. 40.
- Strength of materials, remarks on, ii. 470; tax on bricks, ii. 191.
- Style, &c., retrospective criticism on Mr. Humphrey's suggestions as to models of, v. 189.
- Studies and qualifications necessary for an architect, ii. 99.
- Suburban residence, design for, v. 18.
- Surgeons' College, Lincoln's Inn Fields, improvements and alterations in progress, ii. 190; structures on the new front of, ii. 556.
- Surveyor and architect, present state of the professions of, in England, i. 12.
- Surveyor, notice of an action brought by him for recovering his charge for making certain calculations, iv. 331.
- Suspension Bridge at Clifton, iii. 90. 533; near Wakefield, iii. 96; between Naples and Rome, i. 207; Brunel's, notice of, v. 624; compensation, iv. 385; on the Duke of Buccleuch's estate in Scotland, query respecting the fall of, ii. 475; over the Saone, ii. 87.
- Swansea, various architectural and engineering improvements at, i. 93.
- Sydney, architectural improvements at, i. 276. 375; Mr. Thompson's villa at, i. 376.

T.

- Tabernaclc of Jerusalem, remarks on the, v. 154.
- Table, a marble one, with a cast-iron pillar on an economical principle, i. 308; folding one, brought from India, notice of a, iii. 170; or ironing-board, for small country cottages, v. 75.
- Taste, as an innate feeling or sentiment of propriety, ii. 7; as displayed in the manner of observing and imitating nature, ii. 9; in its distinctive character, ii. 11; in architecture, causes of the different kinds and degrees of, i. 97; a delicate taste, i. 97; means of forming, i. 49; national, in architecture, iv. 484.
- Telford, Thomas, F.R.S., obituary of, i. 320.
- Temple dedicated to the eminent men of Germany, notice of a, v. 279; historical notice of Solomon's, v. 154.
- Temporary Houses of Parliament, critique on, ii. 136.
- Termination to a railway, design for a, iii. 219.
- Thatch, on rendering it incombustible, iv. 552.
- Theatre, ancient, of Catania, iv. 456; a new method of lighting, i. 276; and Circus at Sheffield, iii. 280; in Norton Folgate, in progress, ii. 466; King's Street, St. James's, ii. 424; Edinburgh, defective ventilation of, ii. 29; essay on an ancient, iii. 346.
- Tile, a new flat, for covering roofs, iii. 183; a new Grecian form of one, i. 144.
- Tiles, Grecian and Italian, queries respecting, iii. 96.
- Timber, hydrostatic measurement of, v. 86.
- Tomb, ancient, v. 280.
- Tombs of the Valley of Jehoshaphat, v. 301. ■
- Towel-stands, improved brackets for, i. 391. †

Towel-rails, proposed improvement in placing, i. 96.
 Tower on Muthil, in Aberdeenshire, i. 381; method of righting when off the perpendicular, i. 320; ii. 91.
 Town-Hall and Market-House, plans, elevation, and perspective view of Lutterworth, iii. 569; retrospective criticism on Mr. Hansom's design for a, iv. 405.
 Town-Hall, Birmingham, description and engravings of, i. 379; ii. 16; sinking in the roof of, ii. 48.
 Town-Hall, design for, iv. 90.
 Town-Embellishment Society, notice of one, iv. 594.
 Town with spiral streets, query respecting a, iv. 552.
 Trades, various, all of which depend more or less on architecture, i. 8.
 Transactions of the Institution of Civil Engineers, ii. 515; retrospective criticism on, iv. 154.
 Tredgold, the late Mr. Thomas, proposed subscription for his orphan children, i. 208.
 Trentham Hall, architectural improvements at, by Mr. Barry, i. 141.
 Truss, design for a, iv. 488.
 Truss of a roof of large span, design for, ii. 536; retrospective criticism on G. B. W.'s design for the, iii. 142. 285; iv. 87.
 Turnpike lodge, design for, with remarks, ii. 159.
 Turnpike lodges, appropriateness of the Egyptian style for, ii. 475.

U.

Uniformity in architecture, i. 285.
 United States, progress of architecture in, iv. 544.
 Unity of system in architecture, ii. 1; violation of the principles of, ii. 3.
 Unity of forms in lines, necessity of, in architecture, i. 201.
 Upholsterer's Companion: modern methods of manufacturing, and of spring-stuffing, ii. 42.
 Utility, observations on the principle of, as governing the application of columns, ii. 285; on combining beauty with, in architecture, iii. 49.

V.

Valves, or sluices, improved methods of constructing, iv. 209.
 Valley of Jehoshaphat, notice of the tombs of, v. 301.
 Varden, Mr., reference to, as an architect and landscape-gardener, ii. 282.
 Vehicle-retarder, account of the new, iv. 78.
 Venetian blinds made of glass instead of wood, iv. 206.
 Ventilating apartments, an experimental enquiry into the modes of, iv. 161.
 Ventilating and warming, different modes of, iv. 313; v. 232.
 Ventilating rooms, a mode of, which at the same time cures smoky chimneys, i. 233.
 Ventilation, as applied to hospitals and sick wards, i. 229; causes of defective, and of smoke, in public rooms and dwelling-houses, ii. 27; uses to which gas may be applied, ii. 461; criticism on different modes of, i. 389; Mr. Milne's, remarks on, i. 213. 279; of bedrooms, i. 87; of large buildings, by the intervention of openings in the windows, v. 258.
 Ventilation of living-rooms and domestic offices, i. 64. 213; ii. 558; of the House of Commons, iv. 515; v. 87.
 Verandas and windows, i. 314.
 Vermin, hints on the prevention of, ii. 179.
 Vermin trap in drains, ii. 330.
 Versailles, proposed improvements at, i. 88.
 Viaducts, timber, notice of, v. 623.
 Villas, architectural designs for, exhibiting certain deceptive practices, i. 117; design for a, iii. 456; design for a suburban, iii. 464; design for one, comprising two distinct residences, v. 554; for a sloping site, i. 48; in the style of architecture of the 13th century, design for, with engraving illustrative of the style, ii. 257; chamber plan, 425; Mr. Lamb's (p. 157.) critique on, ii. 377; retrospective criticism on Mr. Lamb's design for a, iv. 86; design for a,

iii. 155; retrospective criticism on Mr. Varden's, iii. 535.
 Village, description of a Wallachian, v. 327; notice of enlargement of Clifton, v. 624.

W.

Wall, banking the river Irwell, fall of the, iii. 140.
 Wall of artificial stone at Woolwich Dock, i. 391.
 Walls of houses, inside of, to secure from damp forced through the brickwork by driving rains, i. 123.
 Waltham Cross, iii. 280.
 Warehouses, description of a cast-iron window and wooden shutter, adapted to, iii. 169.
 Warm and vapour baths, queries concerning the architectural treatment of, iv. 407.
 Warming and ventilating, different modes of, iv. 313. 404; reply of M. F. A. Bernhardt, architect, to the official report of Dr. Ure, F.R.S., on his new system of, v. 182; retrospective criticism on Dr. Ure's report on M. Bernhardt's system of, v. 142.
 Warming apartments, an experimental enquiry into the modes of, iv. 161; churches, query respecting, ii. 240; factories, a new mode of, i. 88.
 Warwick vase, in the Pantheon Bazaar, ii. 465.
 Washhand stand, a method of concealing, ii. 309.
 Washing and wringing machine, i. 247; ambulatory, i. 46.
 Water, boring for, at Diss, in Norfolk, i. 210; conducted in pipes by the ancients, i. 373; ii. 94; essentials requisite for the perfect filtration of, v. 659; machine for raising, from the Seine, iv. 149.
 Water-closets, ambulatory, i. 46; notice of, on an improved plan, &c., iii. 524; without the usual apparatus, notice of Roe's, v. 137.
 Water Companies, the London, iv. 595.
 Water-pipes, mode of securing them against frost, v. 142.
 Water power, notice of a new, v. 334.
 Waterproof casement, ii. 133.
 Waterloo Bridge and London Bridge, remarks on the construction of, v. 255.
 Watt Institution, Dundee, a subscription for erecting a suitable building for, ii. 45.
 Weeks's patent cooking apparatus, description and engravings of, ii. 64.
 Weirs, or river dams, on the most proper sectional form to be given to, v. 261.
 Well dug in the village of Waterbeach, ii. 315.
 Westminster Hall, casing of, with Portland stone, iii. 440.
 Westminster, notice of intended improvements at, v. 479.
 Wheatstone's figures of vibrating surfaces, hints to architects afforded by, i. 138.
 Whitewashing or colouring the fronts of large buildings, mode of, adopted on the Continent, iv. 387.
 Wilberforce, proposed monument to his memory at Hull, i. 211.
 Wild's art of building houses for the humbler classes, ii. 71.
 Windows, a few reflections upon, v. 648; and verandas, i. 314; apparatus for cleaning the outsides of, i. 392; eye-shaped, iv. 593; fastenings for preventing them from shaking during high winds, queries respecting, iii. 96; lofty, inconvenience of, i. 247; on the consistency of the style of, ii. 145; proper height of the lower edge from the floor, i. 280; whether windows down to the floor can be defended on optical principles, i. 280; when blank ones may be used, i. 387.
 Window sashes shaking by the wind, answer to the supposed reasons of, iii. 238.
 Wing walls of brick bridges on railways, queries respecting, iii. 334.
 Witty's turnace, Mr. Edwards's improvements on, i. 91.
 Woburn Abbey, suggestions for the improvement of, by Mr. Barry and others, i. 140.
 Wold's ideas on intercolumniation, ii. 308.
 Wood, pavement of, for streets, iv. 497.
 Wooden fence, without nails or screws, i. 79.

- Woods, dying of with cochineal, an old Swedish practice, i. 240.
 Workhouse, design for a union, v. 510; notice of a union one in progress on Enmore Green, Shaftesbury, Dorsetshire, v. 632.
 Workhouses, notice of some erecting in several parts of Essex, iii. 481.
 Workmen, unions of, bad, i. 45; working over hours, bad, i. 45; connected with architecture and building, i. 86; wages of, iv. 590.
 Works in progress at Holyhead Harbour, Isle of Anglesea, iv. 548.
 Works of art, whether they may with propriety be combined with the sublimity of nature, v. 625.
 Wring Duke, description of, ii. 189.
 Z.
 Zanth, Dr., notice of, v. 424.
 Zinc not oxidisable, v. 276.

BOOKS REVIEWED OR NOTICED.

- ABRAHAM'S Organ Screen of York Cathedral, engraved by Shaw, ii. 85.
 Alderson's Essay on the Nature and Application of Steam, i. 181.
 Angell's Historical Sketch of the Royal Exchange, v. 131.
 Anon. A Complete Scientific and popular Treatise upon Perspective, with the Theories of Reflection and Shadows; illustrated with twenty-four plates, iv. 198.
 Anon. A Compilation of splendid Ornamental Designs, from Foreign Works of recent Production, &c. i. 137.
 Anon. Address and Regulations of the Institute of British Architects, &c. ii. 3-5.
 Anon. A Glossary of Terms used in Grecian, Roman, Italian, and Gothic Architecture, exemplified by 150 woodcuts, iv. 249; v. 80.
 Anon. A Letter to Lord Viscount Duncannon on the new Houses of Parliament, containing Plans and a Perspective View of Mr. Hopper's Design, iv. 44.
 Anon. A Theoretical and Practical Treatise on the Five Orders of Architecture, i. 129.
 Anon. A Series of Designs for Athenian or Grecian Villas, i. 45.
 Anon. Domestic Clubs for the Working Classes, iv. 340.
 Anon. Der Neue Friedhof vom Frankfurt am Main, &c. (the New Cemetery at Frankfort on the Main, &c.), ii. 135.
 Anon. Designs for Chimney-Pieces and Chimney-Glasses, of the Times of Inigo Jones and Sir John Vanbrugh, i. 137.
 Anon. Designs of Doors and Windows, in the Italian and Palladian Styles, i. 137.
 Anon. Designs of the Ornaments and Decorations of Chimney-Pieces of the middle of the last Century, i. 137.
 Anon. Designs for Vases, i. 137.
 Anon. First Annual Report of the Poor Law Commissioners for England and Wales; accompanied by Plans, Elevations, and Sections, illustrative of Designs for Workhouses, by Sampson Kempthorne, Architect, ii. 511.
 Anon. Laws and Regulations of the Architectural Society, 35, Lincoln's Inn Fields, ii. 513.
 Anon. Library Catalogue, and Regulations of the Telford Premiums, of the Institution of Civil Engineers, iv. 588.
 Anon. Minutes of Proceedings of the Institution of Civil Engineers, 1837, iv. 579.
 Anon. On the Public Works of Great Britain, iv. 589.
 Anon. Papers on Subjects connected with the Duties of the Corps of Royal Engineers, iv. 590.
 Anon. Plans and Elevations of the proposed Restorations and Additions to the Cathedral of Glasgow, iv. 394.
 Anon. Rules of the Artists' Conversazione of Newcastle-upon-Tyne, established April 20, 1831, ii. 303.
 Anon. Remarks on Capt. Alderson's Report on the various Lines of Railway to Brighton, iv. 590.
 Anon. Reply to "Contrasts, by A. Welby Pugin," by an Architect, iv. 251.
 Anon. Report by a Committee of the Society of Arts in Scotland, on the best Alphabet, and Method of Printing for the Use of the Blind, iv. 540.
 Anon. Report of the Committee on Mr. Martin's Plan for supplying London with pure Water, &c., iii. 560.
 Anon. Report from the Select Committee on Arts and Manufactures, iii. 38.
 Anon. Report from the Select Committee on Metropolis Improvements, iv. 194.
 Anon. Some Account of Mont Argueil Castle, in the Island of Jersey; and with a poetical Description of the Castle, written by William Prynne, during his Confinement therein, from 1637 to 1646, v. 130.
 Anon. Specimens of English, Flemish, enriched Ornaments, and Architectural and other Decorations, by eminent German, Flemish, and English Masters, during the Periods of Henry VIII., Elizabeth, and James I., and the Middle Ages; collected on the Continent, and in England, iii. 181.
 Anon. The Civil Engineer and Architect's Journal, iv. 578.
 Anon. The Gallery of Practical Science, iv. 203.
 Anon. The Letters of Panopticus to the Morning Post, on the Designs for the Houses of Parliament, illustrated by numerous engravings, iv. 144.
 Anon. Transactions of the Institute of British Architects of London, Sessions 1835, 1836, iv. 33.
 Anon. Transactions of the Institution of Civil Engineers, ii. 515; iii. 38, 152; iv. 42.
 Anon. Transactions of the Society of Arts, Manufactures, and Commerce, v. 420.
 Anon. Views and Descriptions of Cyclopean or Pelasgic Remains, in Greece and Italy; with Constructions of a later Period, i. 81.
 Anon. Views, Plans, and Elevations of the Buildings in the Royal Gardens at Kew, selected from the work published in 1763, by Sir William Chambers, ii. 515.
 Arnott, Dr., on Warning and Ventilating; with Directions for making and using the Thermometer Stove, or self-regulating Fire; and other new Apparatus, v. 120.
 Arundell's Series of Twenty-four Illustrations of the most interesting Views between Grand Cairo and Beirut; including the Desert and Convent of Mount Sinai, the City of Jerusalem, Tyre, Sidon, Nazareth, Bethlehem, and Mount Sinai, iii. 524.
 Bardwell's Temples, Ancient and Modern; or, Notes on Church Architecture, iv. 202, 591.
 Bakewell's Observations on Building and Brick-making, &c., i. 312.
 Barlow's Treatise on the Strength of Timber, Cast-Iron, Malleable Iron, and other Materials; with Rules for Application in Architecture, Construction of Suspension Bridges, Railways, &c.; with an Appendix on the Power of Locomotive Engines and the Effect of Inclined Planes, &c., iv. 334.
 Bartholomew's Specifications for Practical Architecture, iv. 44.
 Beaumont's Hints for preventing Damage by Fire, in the Construction and Warning of Buildings, ii. 75.
 Bennett's Arcanum, v. 271.
 Bennett's Artificer's complete Lexicon for Terms and Prices, &c., i. 83.

- Bennett's Bricklayer's, Plasterer's, Stone-mason's, and Slater's Pocket Director, &c., v. 270.
- Bennett's Carpenter's and Joiner's Pocket Director, &c., v. 270.
- Bennett's Millwright's and Engineer's Pocket Director, v. 130.
- Bennett's Original Geometrical Illustrations, &c., v. 76.
- Bernhardt's Questions relating to Fires in general, the Draught of Smoke, and the saving of Fuel, v. 131.
- Bielefield's Ornaments, drawn from Examples executed in the improved Papier Mâché, ii. 40. 371; iii. 523; iv. 538.
- Billings's Architectural Illustrations and Account of the Temple Church, London, v. 45. 377.
- Billington's Architectural Director, &c., i. 84. 180. 185. 274.
- Birkbeck's Lecture on the Preservation of Timber by Kyan's Patent for preventing Dry Rot, ii. 236.
- Blackburn's Architectural and Historical Account of Crosby Place, London, i. 130.
- Blackburn's Pointed Architecture of England, during the Middle Ages, iii. 524.
- Blunt and Stephenson's Civil Engineer and Machinist, &c., i. 237; v. 78.
- Bourne's Series of Lithographic Drawings on the London and Birmingham Railway; with Topographical and Descriptive Accounts of the Origin, Progress, and general Execution of that great national Work, by John Britton, F.S.A., v. 272. 609.
- Brayley's Illustrations of Christ Church, Hampshire, from Drawings by B. Ferrey, jun., i. 45.
- Brees's Original Designs for Furniture, Candelabra, Architectural Decorations, &c., iii. 181. 524.
- Bree's Railway Practice, iv. 203.
- Britton and Brayley's Address to the Commissioners appointed by His Majesty to examine and report on the Designs for the proposed new Houses of Parliament, &c., ii. 504.
- Britton and Brayley's History and Description of the late Houses of Parliament and ancient Palatial Edifices of Westminster, ii. 71. 184. 234. 372. 504.
- Britton and Pugin's Illustrations of the Public Buildings of London; with historical and descriptive Accounts of each Edifice, v. 606.
- Britton's Ancient and Modern domestic Architecture, iv. 146.
- Britton's brief Memoir of Sir John Soane, i. 310.
- Britton's Catalogue Raisonné of a unique Collection of Books on Cathedral and Architectural Antiquities; with Proofs and Etchings: also Drawings, Manuscripts, &c., iv. 144.
- Brunton's Description of a Practical and Economical Method of excavating Ground, and forming Embankments for Railways, &c.; with practical Observations on the Construction of Railways, iii. 233.
- Britton's Dictionary of the Architecture and Archæology of the Middle Ages, ii. 546; v. 417.
- Britton's History and Antiquities of the Cathedral Church of Worcester; illustrated by a Series of Engravings of Views, Elevations, Plans, and Details of that Edifice, &c., ii. 504.
- Britton's Illustrations, with a Topographical and Descriptive Account of Cassiobury Park, Hertfordshire, i. 180; iii. 182; v. 114.
- Browne's History of the Metropolitan Church of St. Peter, York, v. 272.
- Bruff's Treatise on Engineering, Field-Work, &c., v. 270.
- Buck's Practical Treatise on the Construction of Oblique Arches, commonly called Skew Arches, as applicable to Railways, Canals, &c., iii. 182.
- Butler's Model Farm-Houses and Cottages for Ireland, &c., iv. 145.
- Cadell's Letter to His Grace the Duke of Hamilton, and the other Noblemen and Gentlemen, the Committee appointed by the Subscribers for a Monument in Edinburgh to the Memory of Sir Walter Scott, v. 321.
- Canina's L'Architettura Antica descritta e dimostrata coi Monumenti (Ancient Architecture described and demonstrated from existing Monuments. By the Chevalier Luigi Canina), iii. 176.
- Carter's Ancient Architecture, ii. 84.
- Carter's Crosses of England, ii. 84.
- Caveler's History and Antiquities of Chatham Church, Kent, iii. 524.
- Caveler on Stained Glass, with many brilliantly coloured plates, iii. 524.
- Caveler's Select Specimens of Gothic Architecture, ii. 307; iii. 34.
- Châteauneuf's Entwurf zur Boerse auf dem Adolphs-Platze in Hamburg (Design for an Exchange adapted for Adolph's Square, Hamburg, &c.), v. 320.
- Chippendale's Designs of Interior Decorations in the old French Style, i. 137.
- Chippendale's Designs for Sconces, and Chimney and Looking Glass Frames, in the old French Style, i. 137.
- Clarke's Architectural Illustrations of Eastbury House, Essex, i. 86.
- Clarke's Domestic Architecture of the Reigns of Elizabeth and James I., illustrated by a Series of Views of English Mansions, with brief Historical and Descriptive Accounts of each Subject, i. 204.
- Cockerell's Temple of Jupiter Panhellenius and Antiquities at Egina, i. 86.
- Colman's Normandy, Picardy, &c.; containing Views of some of the most picturesque Exteriors and Interiors of Cathedrals, Churches, and other Objects in Northern France, ii. 303.
- Collie's Plans, Elevations, Sections, Details, and Views of the Cathedral of Glasgow, iii. 88. 522.
- Combe's Lectures on popular Education, iv. 260.
- Cottingham's Armagh Cathedral, i. 239.
- Crelle's Journal für die Baukunst (Journal of Architecture), i. 237.
- Cresy's Analytical Index to Hope's Historical Essay on Architecture, iii. 34.
- Crofton's London Upholsterer's Companion, &c., ii. 42.
- Cust's Letter to Sir Robert Peel, Bart., M.P., on the Expedience of a better System of Control over Buildings erected at the public Expense; and on the Subject of rebuilding the Houses of Parliament, ii. 180.
- Cust's Thoughts on the Expedience of a better System of Control and Supervision over Buildings erected at the public Expense; and on the Subject of rebuilding the Houses of Parliament, iv. 573.
- Dallaway's Series of Discourses upon Architecture in England, from the Norman Era to the close of the Reign of Queen Elizabeth; with an Appendix of Notes and Illustrations, and an Historical Account of Master and Free-Masons, i. 202.
- Davis's Gothic Ornaments, illustrative of Prior Bride's Oratory, in the Abbey Church, Bath, i. 131. 302. 370.
- Davy's Treatise on Artificial Foundations for Buildings, Railways, &c., iv. 203.
- Desgodetz's Architectural Antiquities of Rome, ii. 307.
- Dickson's, Dr., Lecture on the Dry Rot, and on the most effectual Means of preventing it, iv. 532.
- Dodd's Mechanics for Practical Men, i. 240.
- Donaldson's Collection of the most approved Examples of Doorways, from ancient Buildings in Greece and Italy, &c., iii. 318. 517.
- Donaldson's Letter to His Royal Highness the Duke of Sussex, suggesting a Plan for the Promotion of Art, Science, and Literature, by the moderate but effectual Assistance of Government, v. 77.
- Donaldson's Professional Life and Works of the late Sir John Soane, iv. 203.
- Elmes's Historical, Commercial, and Scientific Survey of the Port of London, iv. 589.
- Fairbairn's Treatise upon the Political Economy of Railroads, iii. 182.
- Faulkner's Designs for Mural Monuments, Monumental Tombs, and Chimney-pieces, with useful details, to a large scale, ii. 185.
- Ferrey's Answer to "Thoughts on Rebuilding the Houses of Parliament," ii. 509.

- Foggo's Letter to Lord Brougham on the History and Character of the Royal Academy, ii. 367.
- Gibbon's Manual of the Law of Fixtures, iii. 481.
- Godwin on Concrete, from the Transactions of the Institute of British Architects, iii. 480.
- Godwin's Appeal to the Public on the subject of Railways, iv. 256.
- Godwin's Churches of London; a History and Description of the Ecclesiastical Edifices of the Metropolis, iv. 143. 255. 341. 537; v. 129. 271.
- Godwin's Tabular-Chronological Epitome of the History of Architecture in England, iv. 203.
- Goodwin's Cottage Architecture, ii. 301.
- Goodwin's Domestic Architecture, being a second series of Designs for Cottages, Lodges, Villas, and other Residences, in the Grecian, Italian, and old English Styles of Architecture, &c., i. 152.
- Gordon's Observations addressed to those interested in either Railways or Turnpike Roads, showing the comparative Expedition, Safety, Convenience, and public and private Economy of these two kinds of Road for internal Communication, iv. 256.
- Goury and Jones's Alhambra, iii. 89.
- Gwilt's Elements of Architectural Criticism, for the use of Students, Amateurs, and Reviewers, iv. 333.
- Habershon's Ancient Half-timbered Houses of England, iii. 481.
- Hakewill's Attempt to determine the exact Character of Elizabethan Architecture, illustrated by Parallels of Dorton House, Hatfield, Longleat, and Wollaton, in England; and the Palazzo della Cancelleria at Rome, ii. 369.
- Hakewill's Thoughts upon the Style of Architecture to be adopted in Rebuilding the Houses of Parliament, ii. 506.
- Hallingsworth's Plan and Section of the Waterford and Kilkenny Railway; with Reports, &c., i. 181.
- Hamilton's Letter to the Earl of Elgin, on the new Houses of Parliament, iv. 120.
- Hamilton's Second Letter to the Earl of Elgin, on the Propriety of adopting the Greek Style of Architecture in the construction of the new Houses of Parliament, iv. 120.
- Hamilton's Third Letter to the Earl of Elgin, on the Propriety of adopting the Greek Style of Architecture in preference to the Gothic, in the Construction of the new Houses of Parliament, iv. 340.
- Hay's Laws of Harmonious Colouring adapted to Interior Decorations, Manufactures, and other useful purposes, iii. 226.
- Hood's Practical Treatise on warming Buildings by Hot Water, and an Inquiry into the Laws of radiant and conducted Heat, iv. 589; v. 44.
- Hope's Historical Essay on Architecture, i. 457; ii. 234. 562. 558; iii. 32. 86. 129. 171. 223. 317; iv. 245. 529; v. 171. 317. 422. 475. 611.
- Hopper's Letter to the Right Hon. Lord Viscount Duncannon, in Explanation of the Proceedings of the Architects who were Competitors for building the new Houses of Parliament, &c., iv. 120.
- Hopper's Plans, Elevations, and Sections of his Design for the new Houses of Parliament, iii. 524.
- Inmann's Report of the Committee of the House of Commons on Ventilation, Warming, and Transmission of Sound, iii. 478.
- Inwood on the Resources of Design in the Architecture of Greece, Egypt, and other Countries, obtained by the Studies of the Architects of those Countries from Nature, ii. 36.
- Jackson's Observations on a Letter from W. R. Hamilton, Esq., to the Earl of Elgin, on the new Houses of Parliament, iv. 198.
- Jamieson's Mechanics of Fluids for Practical Men, v. 44. 173.
- Johnson's Book of Ornaments in the French and Antique Styles, i. 137.
- Jones's Athenian or Grecian Villas, &c., ii. 299.
- Kent's Translation from the French, of M. Quatremère de Quincy, on Imitation in the Fine Arts, iv. 43.
- King's Cabinet-maker's Sketch Book of Plain and Useful Designs, ii. 304. 512; iv. 324.
- King's Working Ornaments and Forms for the use of the Cabinet Manufacturer, &c., i. 370.
- Knight's Unique Fancy Ornaments, i. 274.
- Lardner's Steam Engine, ii. 308.
- Lawrence's Perspective Simplified, v. 420.
- Laxton's Improved Builder's Price-Book, iii. 88.
- Lewis's Address on the subject of Education, as connected with design in every department of British Manufacture, v. 268.
- Lewis's Portraits of British Forest Trees, with and without their Foliage, &c, v. 421.
- Lewis's Sketches of the Alhambra, ii. 307.
- Litronne's History of Mural Painting, and the Decoration of Temples and other Public and Private Edifices among the Greeks and Romans, iv. 145.
- Le Keux's Memorials of Cambridge; with Historical and Descriptive Accounts of the Buildings, &c., by Thos. Wright, M. A., iv. 588; v. 130. 271.
- Lock's Book of Ornaments, i. 137.
- Lockwood and Cates's Ancient Gates and Fortifications of the City of York, i. 86.
- Lockwood and Cates's History and Antiquities of the Castle at Coningsburgh, in the County of York, ii. 187.
- Loudon's Arboretum Britannicum, ii. 187.
- Loudon's Suburban Gardener, iv. p. 503.
- Maceroni's Illustrations of Steam, &c., ii. 304.
- Martin's Plan for rescuing the Thames River from every Species of Pollution; for the Improvement of the Wharfrage, the Establishment of Two great Public Walks, and for other Objects of Public Utility and Importance, iii. 360.
- Matthews's Hydraulia, ii. 307.
- Metcalf and Carmichael's Views of Fountains Abbey; with a Historical and Architectural Description, by T. Sopwith, i. 314; ii. 235.
- Milne's Plans for the Improvement of the Port at Leith, iii. 278.
- Möller's Memorials of German-Gothic Architecture; with additional Notes and Illustrations from Stieglitz, &c., iii. 173.
- Morisset's La Propriété; Journal d'Architecture Civile et Rurale, des Beaux Arts, et d'Economie Sociale, i. 43.
- Murphy's Plans, Elevations, Sections, Details, and Views of the splendid Church of Batalha, in Portugal, ii. 307.
- Nash's Selections and Fragments of the Architecture of the Middle Ages, drawn from Nature, and on Stone, v. 520.
- Neill's Observations on the Proposal of building at the Cross, and of shutting up the Royal Bank Close, Edinburgh, v. 133.
- Nicholson's Treatise on Dialling, ii. 255.
- Nicholson's General Treatise on Projection, i. 372.
- Nicholson's Treatise on Projection, &c., v. 75.
- Noble's Professional Practice of Architects, &c., iii. 475.
- Pambour's Practical Treatise on Locomotive Engines upon Railways, ii. 516; iii. 38, 231.
- Parker's Suggestions for Warming and Ventilating the Houses of Parliament with Hot Water in Cast-Iron Pipes, &c., iii. 479.
- Parker's Suggestions for Warming and Ventilating Thirty-seven Cells to be erected in the Salop Gaol, for the separate Confinement of Prisoners, v. 133.
- Parnell's Treatise on Roads, &c., v. 379.
- Parsey's Arithmetic, illustrated by Woodcuts, iv. 258.
- Parsey's Perspective Rectified, iii. 270.
- Passavant's Tour of a German Artist, iii. 274.
- Partington's Popular Account of the Steam-Engine and Steam Boats, iii. 481.
- Pether's Book of Ornaments suitable for Beginners, i. 137.
- Philips's Analysis of the Defective State of Turnpike Roads and Turnpike Securities, i. 86.
- Pugin's Contrasts, iv. 132.
- Pugin's Designs for Gold and Silver-smiths, ii. 308.
- Pugin's Designs for Iron and Brass Work, ii. 308; iii. 39.
- Pugin's Details of Ancient Timber Houses, selected from those existing at Rouen, Caen,

- Beauvals, Gisors, Abbeville, Strasburg, Nuremberg, &c., iv. 144.
- Pugin's Letter to A. W. Hakewill, in Answer to his Reflections on the Style for rebuilding the Houses of Parliament, ii. 507.
- Quatremère de Quincy on the Principle of Imitation in the Fine Arts, iii. 481.
- Raine and Salvin's Catterick Church, in the County of York, i. 137. 273.
- Raz's Essay on the Architecture of the Hindûs, i. 240. 267.
- Reid's Chemistry of Nature, &c., iv. 589.
- Richardson's Observations on the Architecture of England during the Reigns of Queen Elizabeth and King James I., iv. 393.
- Richardson's Popular Treatise on the Warming and Ventilation of Buildings, &c., iii. 130; iv. 253.
- Rickman's Attempt to discriminate the Styles of Architecture in England, with Notices of above Three Thousand Edifices, i. 86.
- Robinson's Domestic Architecture in the Tudor Style, iii. 89; iv. 144.
- Robinson's Domestic Vitruvius, iv. 44.
- Robinson's Hardwick Hall, i. 372.
- Robinson's New Vitruvius Britannicus, i. 86.
- Robinson's Plans, Elevations, Sections, and Details of the Ancient Gates, Fortifications, and other interesting Buildings in York, i. 181.
- Rochette's Villa Pia des Jardins du Vatican, Architecture de Pirro Ligorio, publiée dans tous ses Détails, par J. Bouchet, Architecte, &c., iv. 541.
- Ross's Laocoon; an Essay on the relative Limits of Poetry and Painting: translated from the German of Lessing, iii. 235.
- Schinkel's Designs, ii. 81. 365.
- Simms's Practical Observations on the Asphaltic Mastic, or Cement of Seyssel, &c., v. 81.
- Simms's Sectio-Planography, iv. 590.
- Simms's Treatise on the Principal Mathematical Drawing Instruments, iv. 590.
- Smirke's Suggestions for the Architectural Improvement of the Western Part of the Metropolis, i. 137. 177.
- Smith's Chairman and Speaker's Guide, ii. 514.
- Smith's Evolution; the Power and Operation of Numbers, &c., ii. 514.
- Smith's Practical and Scientific Treatise on Calcareous Mortars and Cements, iv. 587.
- Sopwith's Account of the Mining Districts of Cumberland and Durham, ii. 304.
- Sopwith's Historical and Descriptive Account of All Saint's Church, in Newcastle-upon-Tyne; illustrated with Plans, Views, and Architectural Details, ii. 549.
- Sopwith's Observations on a proposed Line of Road from Shotley Bridge to Middleton in Teesdale, v. 272.
- Sopwith's Treatise on Isometrical Drawing, &c., i. 369.
- Stevenson's Sketch of the Civil Engineering of North America, v. 471.
- Stuart and Revett's Antiquities of Athens, ii. 507.
- Stuart's Antiquities of Athens, and other Monuments of Greece, iv. 341.
- Thompson's Designs for the proposed new Houses of Parliament, iii. 130. 178.
- Tottie's Designs for Sepulchral Monuments, v. 519.
- Trendall's Examples for Interior Finishings, &c., i. 136.
- Trotter's Observations on a Communication between the New and the Old Town of Edinburgh, i. 205.
- Ure's Dictionary of Arts, Manufactures, and Mines, v. 470.
- Walker on the Comparative Merits of the various Systems of Warming Buildings by means of Hot Water, iv. 336.
- Walker's Continuation of Pugin's Works on the Architecture of the Middle Ages, iii. 89; iv. 202.
- Walker's History and Antiquities of the Vicar's Close, Wells, forming Part I. of Pugin's Examples of Gothic Architecture, iii. 513; iv. 146.
- Walker's History and Antiquities of the Manor House and Church at Great Chatfield, Wilts, forming Part II. of Examples of Gothic Architecture, iv. 491.
- Walker's Three Perspective Views taken from the points specified by the Select Committee on rebuilding the Houses of Parliament, &c., ii. 515.
- Wallen's History and Antiquities of Little Maplestead Church, Essex, ii. 307; iii. 277.
- Weale's Catalogue of Books on Architecture and Engineering, with several Drawings and Prints, iii. 481.
- Weale's Geometrical Elevation of the National Gallery, from Mr. Wilkins's Drawing, i. 372.
- Weale's Scientific Advertiser, v. 133.
- Weale's Specimens of the Tudor and Elizabethan Styles of Architecture and Interior Decorations, iii. 481.
- Whishaw's Analysis of Railways, iv. 203. 255.
- Wilds's Elementary and Practical Instructions on the Art of Building Cottages and Houses for the Humbler Classes, i. 314. 372; ii. 71.
- Wilkins's Civil Architecture of Vitruvius, i. 372.
- Wilkins's Prolusiones Architectonicæ; or, Essays on Subjects connected with Grecian and Roman Architecture, v. 42.
- Wilkinson's Manners and Customs of the Ancient Egyptians, &c., v. 310.
- Williams's Historical Sketch of the Art of Sculpture in Wood, ii. 308. 547.
- Williams's Select Catalogue of Works on Architecture, Engineering, and the Fine Arts, iii. 524.
- Willis's Remarks on the Architecture of the Middle Ages, especially of Italy, ii. 234. 297.
- Wilson's Helps to the Building of Churches and Parsonage Houses, containing Plans, Elevations, Specifications, &c., iii. 35.
- Winkles's Illustrations of the Cathedral Church of Salisbury, &c., the Description by Thomas Moule, Author of An Essay on Roman Villas, ii. 184.
- Wolff's Beytrage zur Æsthetik der Baukunst, &c. Æsthetics of Architecture, &c., ii. 34.
- Wood's Practical Treatise on Railroads, &c., v. 419.
- Wood's Series of Plans for Labourers' Cottages, &c., iv. 309.
- Wood's Critical Remarks on Continental Architecture, Ancient and Modern, and on the Classical Architecture of Greece, new edition, iii. 480.
- Woolhouse's Tables of Continental, Lineal, and Square Measures, iii. 278.

LIST OF ENGRAVINGS.

Public Buildings.

- Bank of England, interior view of the Dividend, Pay, and Warrant Office, fig. 20. vol. iii. p. 110.
- Castle, ancient British, plan and section of an, figs. 63, 64. iv. 364, 365.
- Cemetery Chapel, design for a, figs. 194—196. iii. 563—565.
- Cemetery, St. Mary's, Kirkdale, Liverpool, plans and elevations of, figs. 95—99. iv. 434—437.
- Chapel at Bude Haven, Plymouth, plan, elevations, and section of a, figs. 169—173. ii. 345. 347.
- Chapel, geometrical elevation of a, figs. 50, 51. ii. 128, 129.
- Chapel of St. Leonard's Hospital, Stamford, Lincolnshire, elevation of the west end of, fig. 133. i. 292.
- Chapel of Ease, St. Mary's, Dublin, perspective view of, fig. 207. iii. 583.

- Church and Churchyard, isometrical view of, fig. 122. v. 359.
- Church at Charmouth, perspective view of a, fig. 177. v. 509.
- Church at Kraschen, views of, figs. 15, 16. iii. 63, 64.
- Church, designs for a, figs. 129—132. iv. 569—571.
- Church, Iffley, Oxfordshire, elevation of the west front, fig. 132. i. 291.
- Church, Monkstown, Dublin, perspective view of, fig. 208. iii. 584.
- Church, plan, elevation, and perspective view of a, figs. 134—136. i. 293, 294; plan of a, fig. 174. ii. 388; plan of a, fig. 45. iv. 239; plans, elevations, and sections for a, figs. 76—81. v. 223—225.
- College, Girard, perspective view of the, fig. 167. v. 447.
- Custom-House, New York, plans, perspective views, section, and details of, figs. 222—229. ii. 526—532.
- Glyptotheca, view of the, fig. 30. v. 91.
- Hall, Apothecaries', at Dublin, plans of two floors of the, figs. 67, 68. ii. 167.
- Hall, Birmingham New Town, plans, elevations, sections, perspective views, &c., of the, figs. 1—9. ii. 17—27.
- Hospital, plans and perspective view of South Devon and East Cornwall, figs. 197—199. iii. 567—569.
- Houses of Parliament, plan and perspective view of a design for the, figs. 17, 18. iv. 113—115.
- Institution, Edinburgh Royal, elevation and perspective view of, figs. 163, 164. ii. 312, 320.
- Institution, Liverpool Medical, plans and elevation of, figs. 71—73. iv. 383, 384.
- Kirk at Alyth, plans, elevation, and section of the roof of the, figs. 191—194. v. 572—575.
- Lodge, Turnpike, plan, elevations, and details of, figs. 55—59. ii. 159, 160.
- Market, Covent Garden, figs. 290—294. v. 666—673.
- Market, Exeter Higher, plan, elevation, and sections of, figs. 1—5. iii. 12—15.
- Market-House and Town-Hall at Lutterworth, plans, elevation, and perspective view of, figs. 200—204. iii. 570—573.
- Market, Hungerford New, plans, elevations, sections, and perspective views of, fig. 18—23. i. 56—61.
- Market, St. John's, Liverpool, plan and perspective view of, figs. 52, 53. ii. 131, 132.
- Monuments, Earl of Plymouth's, on Broomsgrove Lickey, perspective view of, fig. 202. i. 379.
- Monuments, designs for two, figs. 195—197. v. 576—577.
- Monument, plan and perspective view of a naval, figs. 112, 113. iv. 521—523.
- Monument, the Duke of York's, plans, elevations, sections, &c., of, figs. 92—107. i. 195—199.
- Metropolitan Improvement, Mr. Martin's plan for a, figs. 142, 143. iii. 380—382; Mr. Rainy's plan for a, fig. 119. iii. 312.
- National Gallery, elevations of, fig. 1, 2. iv. 25—27; plans and elevation of, figs. 7—10. iv. 58—61.
- Obelisk of Luxor, at Paris, sketches for restoring it to its original form, figs. 122—128. iv. 561—563; cut showing the mode of raising it, fig. 105. iv. 470.
- Obelisk, perspective view of one, fig. 165. ii. 321; plan of building one without scaffolding, figs. 173—176. v. 504—507.
- Obelisk, Waithman, perspective view of the, fig. 24. ii. 94.
- Olympium, Athenian, ideal restoration of the, fig. 41. v. 106.
- Railway, design for a termination to a, figs. 91—97. iii. 219—224.
- School, Proprietary, at Islington, design for a, figs. 23—25. v. 70—73.
- Theatre, plan of an ancient, fig. 135. iii. 353.
- Town-Hall and Market-House at Lutterworth, plans, elevation, and perspective view of, figs. 200—204. iii. 570—573.
- Town-Hall and Market-House, plans for a, figs. 93, 94. iv. 406, 407.
- Town-Hall, Birmingham, plans, elevations, perspective views, sections, &c., of, figs. 1—9. ii. 17—27.
- Workhouse, plans and elevation of a, figs. 178—182. v. 510—514.

Private Buildings.

- Coniston Hall, on the shores of Coniston Water, view of, fig. 71. v. 150.
- Conservatory, plan and elevation of a, figs. 120, 121. iv. 549.
- Cottage, design for a labourer's, fig. 27, 28. v. 74.
- Cottage, ground plan of a, fig. 201. i. 376.
- Cottage near La Cité Val d'Aosta, perspective view of, fig. 49. v. 104.
- Cottage, perspective view and ground plan of a, figs. 230, 231. ii. 533, 534.
- Cottage, perspective view of a, fig. 42. v. 116.
- Cottage, plan and elevation of a, figs. 125, 126. iii. 331, 332, and figs. 107, 108. iv. 490.
- Cottage, plans, elevations, sections, &c., of a design for a labourer's, figs. 32—44. iii. 121—127.
- Cottages, plans for, figs. 45—51. v. 118—120.
- Cottages, Swiss, perspective views of, figs. 14, 15. v. 59—63.
- Cottage Villa, plan of a, fig. 183. i. 350; plans and elevations of a, figs. 114—119. iv. 525—527.
- House for an invalid, plans for a, figs. 168—170. v. 460—463.
- House, ground plan of a, fig. 70. iv. 381.
- House, Street, ground plan of a, in the city of New York, fig. 210. ii. 491.
- House, ground plan of one on the Boulevard de la Madeleine, fig. 205. iii. 576; fig. 4. iv. 31.
- House, elevation of one in the Elizabethan style, fig. 175. ii. 392.
- House, plan and elevation of a, figs. 54, 55. iv. 286, 287.
- House, plan and section of a dining-room, figs. 159, 160. ii. 279, 280.
- House, plan of a dining-room of a, fig. 128. ii. 231.
- House, plan of a room in, fig. 209. ii. 475; plans for rooms in, figs. 13, 14. ii. 57, 58, and figs. 176, 177. ii. 394—398.
- House, plans of a, figs. 108, 109. i. 226, 227.
- House with a private Observatory, ground plan of a, fig. 48. iv. 272.
- Lodge, design for one in the Italian style, figs. 192, 193. iii. 512, 513.
- Lodge, Entrance, design for a, figs. 120—123. iii. 314, 315.
- Mansion at Moscow, perspective view of a, fig. 25. ii. 121.
- Residence, design for a suburban, figs. 1—3. v. 19—22.
- Villa, Cottage, plan of a, fig. 183. i. 350.
- Villa, design for a, figs. 179—182. iii. 457—463, and figs. 188—190. v. 556—558.
- Villa, design for a suburban, fig. 183. iii. 467.
- Villa in the Norman style of architecture, plan, elevation, interior views of, and details, figs. 163—182. i. 334—345.
- Villa in the style of architecture of the thirteenth century, design for a, figs. 139—158. ii. 257—274.
- Villa, old English, view of a, fig. 127. v. 390.
- Villa, Petrarch's, at Arquà, Italy, sketch of, fig. 117. v. 340.
- Villa, plan and elevations of a, figs. 54—56. i. 118, 119.
- Villa, plans and elevations of a suburban, figs. 50—59. iii. 156—167.
- Villa, plan, section, and interior view of, figs. 181—184. ii. 426, 427.
- Villa Porro, Lago di Como, view of the, fig. 100. v. 295.
- Villa Somma Riva, Lago di Como, view of, fig. 87. v. 247.
- Villa Bellagio, the Mountain, of the Lago di Como, view of, fig. 86. v. 246.

Furniture.

- Bath, Shower, sketches of a cheap portable, figs. 171, 172. v. 468, 469.
- Blinds, Venetian, made of glass instead of wood, sketches of, fig. 29. iv. 206.
- Boilers, section, &c., of a cock for, figs. 117—120. i. 240, 241.

Bookcase, design for an architectural, fig. 92. iv. 399., and figs. 271—276. v. 598—603.
 Brackets for Towel-stands, fig. 206. i. 391.
 Chairs, ancient Egyptian, figs. 107—110. v. 314, 315.
 Chairs, rocking, American, figs. 288, 289. v. 664, 665.
 Chests, Tea, designs for, figs. 88, 89. iv. 397.
 Commode, design for an architectural, fig. 91. iv. 398.
 Desk, design for an architect's, figs. 94—98. v. 262—265.
 Dinner-Waggon, design for a, fig. 90. iv. 398.
 Dressing-room Swing-Glass, new fastening for, fig. 278. v. 605.
 Fireplace, Cottage, plan of a, fig. 82. v. 226.
 Fireplace, design for one in the Norman style, fig. 181. i. 347.
 Footstool, design for a, fig. 219. ii. 512.
 Grate, plan and front view of an improved, figs. 110, 111. i. 232.
 Kangaroo Chair, an ancient Egyptian one, fig. 113. v. 316.
 Oven, Egyptian, sketch and section of an, figs. 96—98. ii. 178.
 Piano-forte, design for a, fig. 4. v. 28.
 Range, Cottager's Cooking, view and section of, figs. 19, 20. ii. 66, 67.
 Range, Kitchen, suitable for a gentleman's family, fig. 21. ii. 68.
 Range, Kitchen, Weeks's, perspective view and details of, figs. 17, 18. ii. 65, 66.
 Range, suitable for a hotel, a club-house, or confectioner's, figs. 22, 23. ii. 69, 70.
 Seat, an hourglass, fig. 218. ii. 512; a reading, fig. 220. ii. 513.
 Seats, Egyptian, sketches of, figs. 111—114. v. 316.
 Sideboard, design for a, fig. 17. i. 42.
 Sofa, a circular Ottoman, fig. 221. ii. 513.
 Sofa, design for, fig. 277. v. 605.
 Stands, Towel, sketch of a bracket for, fig. 206. i. 391.
 Stools, ancient Egyptian, figs. 111, 112. and 114. v. 316.
 Stove, Bruges, sketch and sections of, figs. 35—37. i. 77.
 Stove, design for one on a new construction, for heating any large apartment, or the House of Commons, figs. 72, 73. v. 168—171.
 Stove, Russel, sketches of the, figs. 32, 33. i. 75.
 Stove, sketch of an improved one, fig. 34. i. 76.
 Swing-Glass, fastening for, fig. 278. v. 605.
 Table, Folding, perspective view of a, fig. 63. iii. 170.
 Table, or Ironing-Board, for small country cottages, design for a temporary, fig. 29. v. 75.
 Table, sketch of a marble one with a cast-iron pillar, figs. 149, 150. i. 308, 309.
 Tables, designs for, figs. 79—87. iv. 395—397.

Details of Ancient Architecture.

Architecture, Egyptian, details of, figs. 1—9. i.

19—23; Grecian, details of, figs. 10—13. i. 25—29.
 Bases and Pedestals, Hindú, figs. 126—129. i. 269.
 Capital in the Vatican, remarkable Corinthian, fig. 184. i. 356.
 Columns, Hindú, figs. 130, 131. i. 271, 272.
 Composite Order, fig. 124. i. 264.
 Corinthian Capital, remarkable one in the Vatican, fig. 184. i. 356.
 Corinthian Order, fig. 122. i. 261.
 Doric Order, fig. 10. i. 25., and fig. 123. i. 262.
 Egyptian Architecture, details of, figs. 1—9. i. 19—23.
 Grecian Architecture, details of, figs. 10—13. i. 25—29.
 Ionic Order, fig. 11. i. 26.
 Mouldings of Classical Architecture, figs. 41—51. i. 110; of Hindú Architecture, fig. 125. i. 268.
 Tuscan Order, fig. 14. i. 30.

Engineering.

Alarum-Thermometer, Kewley's, fig. 115. v. 335.
 Bridge, Chain, geometrical representation and details of one, figs. 60—66. ii. 162—164.
 Bridge, Compensation Suspension, design for a, figs. 74—77. iv. 385, 386.
 Calorifères, geometrical elevations and sections of, figs. 186—195. i. 360—365.
 Calorifères, plans of different, figs. 7—11. v. 32—40.
 Canal and Dock Gates, plans of sluices or valves for, figs. 30—44. iv. 211—229.
 Chain Bridge, geometrical representation and details of one, figs. 60—66. ii. 162—164.
 Compensation Suspension Bridge, design for a, figs. 74—77. iv. 385, 386.
 Corrugated Cast-Iron Roof of the Coal Dépôt of the London Gas Works, Vauxhall, figs. 16—22. v. 66—69.
 Dock Gates, plans of sluices or valves for, figs. 30—44. iv. 211—229.
 Docks, London, method employed in excavating and removing the soil of the new cut and entrance at the, fig. 217. ii. 501.
 Obelisk, method of building one without scaffolding, figs. 173—176. v. 504—507.
 Obelisk of Luxor, mode of raising the, fig. 105. iv. 470.
 Railroads, Ruthven's improved rails for, figs. 133, 134. iv. 591, 592.
 Spring for shutting a Door which opens both ways, plan of Beattie's, figs. 234, 235. ii. 553, 554.
 Sluices and Valves for Canal and Dock Gates, plans of, figs. 30—44. iv. 211—229.
 Suspension Bridge, Compensation, design for a, figs. 74—77. iv. 385, 386.
 Trusses, Metallic, sketches of those used for securing decayed flooring and partitions at Apothecaries' Hall, Dublin, figs. 72—95. ii. 170—177.
 Valves and Sluices for Canal and Dock Gates, plans of, figs. 30—44. iv. 211—229.

. Besides the Engravings in the above List, there are above a thousand on miscellaneous subjects, diagrams, &c., distributed through the five volumes; lists of which will be found in the Table of Contents prefixed to each volume.

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